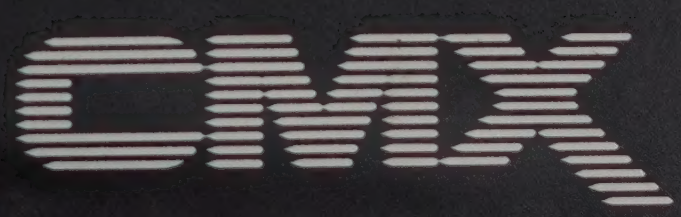
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CMX 330XL OPERATIONS MANUAL

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Revision A

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INTRODUCTION

The CMX 330XL editing system has been designed to make videotape editing easier than ever before. Compact, yet powerful, -- easy to operate, yet capable of sophisticated performance, the 330XL will allow you to express your creativity as a videotape editor. Now you're about to learn the specifics of how the state-of-the-art capabilities of the 330XL system can help you in your daily editing work.

As you use this operations manual to become acquainted with the 330XL, remember that the manual has been as carefully designed as the system itself. We've tried to anticipate your questions, and introduce you to system features and functions in a logical order.

We've kept technical terms to a minimum, and tried to keep instructions clear and simple..

We're sure that in just a little while you'll be editing with the same freedom and creativity that CMX editors around the world have been enjoying for years!

WHAT THE CMX 330XL DOES

The 330XL is a computer-based system that provides fully integrated, frame-accurate control of videotape machines, audio recorders, effects switcher, and other teleproduction devices. As you, the editor, enter commands on the keyboard, the system responds by carrying out your instructions.

Simply stated, the 330XL allows you to select scenes from the playback footage and electronically transfer them to the Record master videotape. The system keeps track of all the information that pertains to each edit so that this data can be saved for future reference.

At the end of an editing session, the 330XL produces three final products:

- A Record master videotape of the edited show that has frame-accurate, stable edits.

- A printout of all the edit decisions that make up the show, including any additional notes and comments entered by the editor.

- An Edit Decision List on floppy disk or punched papertape that can be loaded into any CMX system to make changes in the show and for final auto-assembly of the program.

The process of producing these final products is what this manual is all about.

The rest of this introductory section will focus on some of the basic concepts of computer-assisted editing. There is an explanation of time code and the technique of off-line and on-line editing.

THE ROLE OF TIME CODE

Time code is what makes computer-assisted editing possible. Without it, there would be no way to label each frame of video. If each frame of video cannot be identified, then there cannot be frame-accurate edits -- which is the main purpose of computer-assisted editing.

Time code is an eight-digit number, which looks like this:

01:54:32:14

This means there is 1 hour, 54 minutes, 32 seconds, and 14 frames. In the United States there are 30 video frames each second.

There are two types of time code used in the U.S. and other countries that use the NTSC (National Television Systems Committee) format. They're called Non-Drop Frame and Drop Frame time code.

NON-DROP FRAME

Time code editing first appeared in 1967. It was referred to as "continuous" time code because it labeled every video frame at a 30 frame-per-second rate. NTSC color video, however, is actually recorded with only 29.97 frames-per-second. As a result, one hour of "continuous" (Non-Drop Frame) time code actually labeled the videotape with 00:59:56:12 in one hour of real clock time.

DROP FRAME

In order to make time code agree with clock time, another time code format called Drop Frame was

developed by SMPTE, the Society of Motion Picture and Television Engineers. Somehow the time code numbering sequence had to be shortened by 108 frames an hour.

The formula SMPTE came up with calls for two frame numbers in the counting sequence to be skipped ("dropped") at the beginning of each minute, except for every 10th minute, when no frame numbers would be dropped.

This two-frame per minute loss occurs only at the change from minute to minute, except for the 10th, 20th, 30th, 40th minutes, etc. For example, when the time changes from 3:59:29, the next frame would read 4:00:02. Frames 00 and 01 are discarded in Drop Frame time code.

TIME CODING VIDEOTAPES

When using time code with a computer-assisted editor, it is important that each roll of videotape has ascending time code numbers. The beginning of the reel must start out with a lower number that increases in time to a higher number. If the time code numbers were all out of sequence, the computer could not tell which direction you wanted it to go.

In addition to having time code laid down, the Record master videotape must also have control track and a continuous video signal, usually black burst, recorded on it. This black signal is also referred to as color black, crystal sync, and edit black.

Control track is similar to the sprocket holes on film. It makes it possible for the videotape to run at a constant speed.

Black burst provides the synchronizing signals for the system to lock on to and to stabilize the VTRs.

The term "black tape" (or "basic tape") means a videotape has pre-recorded black burst with control track and time code. This is used as the Record master videotape. During the process of insert editing, the black signal will be replaced frame-by-frame with the selected scenes.

CUTS-ONLY SYSTEM

The 330XL is available with a CMX 5 X 1 Cuts-Only Switcher. The 5 X 1 (five-by-one) means there are five inputs for video sources (A, B, and C-VTR, AUX, and Black), and one output from the switcher that feeds into the Record VTR.

With the Cuts-Only System, all edits appear as cuts on the master videotape. But you can still call for edits to be dissolves, wipes, and keys, and they will be entered into the Edit Decision List as multi-source edits. This edit list can then be auto-assembled on any CMX System that has an effects switcher.

OFF-LINE AND ON-LINE EDITING

The situation just described is the off-line and on-line technique often used in video post-production.

In off-line editing, 3/4-inch or 1/2-inch dubs are usually made of the camera-original videotape footage. These dubs are then edited using the less expensive 3/4-inch or 1/2-inch machines.

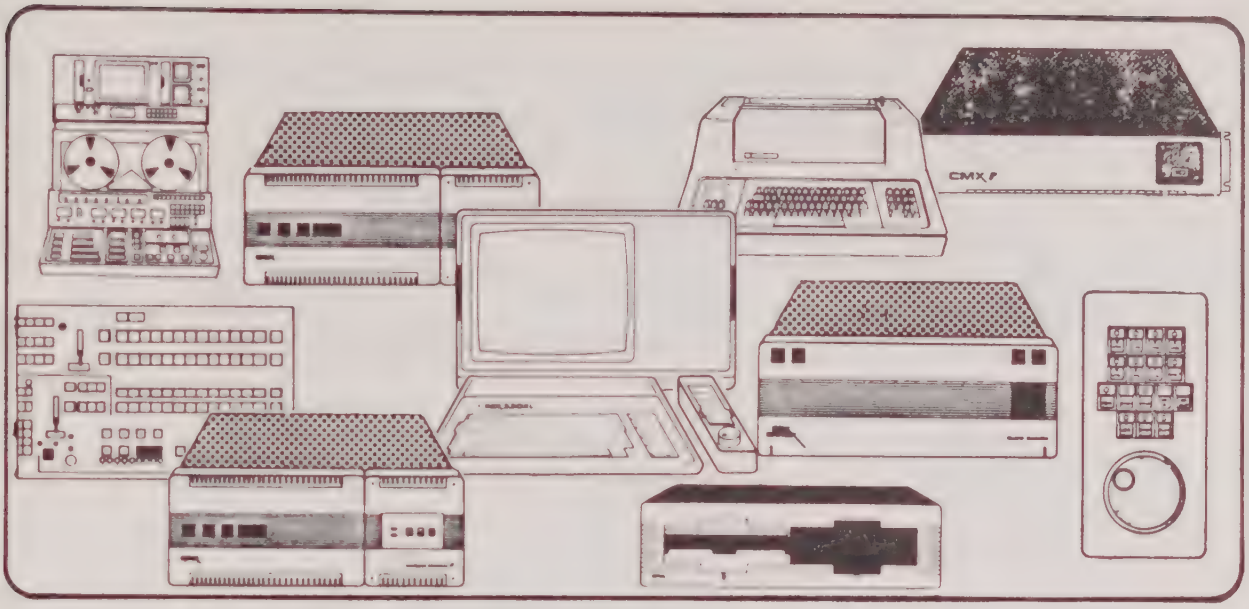
A Cuts-Only System is often used for off-line editing because it's not necessary to see dissolves, wipes, and keys on the worktape. But any type of computer-assisted editor, either with or without an effects switcher, can be used for off-lining.

The main product of an off-line editing session is not the worktape itself, but the Edit Decision List. The edit list is a log of all the edits or events in a show, including their time code locations, transition types, A/V modes, etc. This Edit Decision List stored in the computer's memory can be punched out on papertape or stored on floppy disk.

During the on-line editing session, the edit list can then be loaded into the memory of a 330XL with a production switcher with full effects signal processing. The final version of the show will have dissolves, wipes, and keys as called for in the Edit Decision List.

The advantage of off-lining a show is in cost-savings. An off-line edit room with 3/4-inch machines and a Cuts-Only System is much less expensive than an on-line editing room with 1-inch VTRs and a 330XL with a full effects switcher. Many of the situation comedies and network specials are off-lined using this technique.

Because the rates for using an off-line system are less expensive, the editor can afford to spend more time making creative decisions. In addition, the amount of time spent using the more costly on-line editing system has been greatly reduced because all edit decisions have already been made.



330XL SYSTEM OVERVIEW

SECTION 2 OVERVIEW

The CMX 330XL editing system is more than just a keyboard and edit screen -- it is an entire system of components working together at your command.

Today's video editing system is made up of a wide range of equipment, including videotape recorders (VTRs), video-cassette recorders (VCRs), audio tape recorders (ATRs), effects switchers, matte cameras, character generators, digital effects device, etc. Not suprisingly, each of these teleproduction devices has different requirements and characteristics. By using an approach called distributed processing, the system integrates this vast array of components into an efficient system that simplifies and speeds up the editing process.

Because the 330XL is a software-based modular system, it will be easy to interface new hardware that is developed in the future. This expandability, however, means that system configurations vary depending on the components and options that have been installed.

The following is a brief description of each standard and optional component in the 330XL System.

CMX 330XL SYSTEM COMPONENTS

- **Edit Console**
  Includes the Keyboard and Edit Screen.

- **Central Controller**
  Controls all the components in the system.

- **Intelligent Interface (I^2)**
  (pronounced "I-squared")
  The computer's link to each teleproduction device. This can be either a single I^2, a Multi-I^2, or the CMX Superkit (Tri-Z80 I^2). Superkit is three interfaces on a single interface card which fits into the Multi-I^2 chassis.

- **Line Printer**
  A system option which prints out a hard copy of the EDL.

- **Data Terminal**
  A system option which prints our a hard copy of the EDL and is used in diagnostic procedures.

- **Floppy Disk Drive**
  Used to load the system Operating Program into the computer and for storing or loading the EDL.

- **CMX A/V Switcher**
  The 330XL system can be configured with a cuts-only A/V Switcher instead of a full electronics effects switcher.

- **High Speed Reader/Punch**
  A system option to load Edit Decision Lists from papertape and store EDLs on papertape.
- **General Purpose Interface (GPI)**
  A system option to control production devices other than VTRs, VCRs, ATRs, or switchers.

- **GISMO**
  A system option which allows the editor to control the motion functions of each machine at a desired forward and reverse speed.

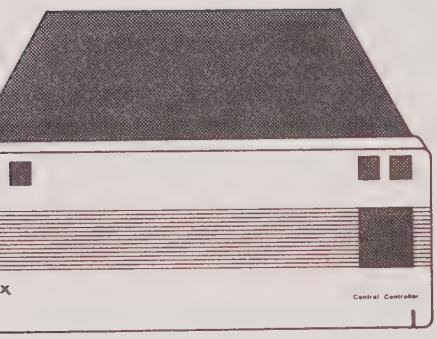
330XL COMPONENT DESCRIPTIONS

The following is a detailed description of each of the components in the 330XL System. Because the Edit Keyboard and Edit Screen are such a vital part of the system, they each have an entire section devoted to them later in the manual. The use of system options is also described in subsequent sections of this manual.

You will probably want to refer to this description of the system components when you read the section on System Start-Up.

Even if you have not had extensive experience with computers, you shouldn't feel intimidated by the technology. The computer is only a tool to handle the repetitive, cumbersome number-crunching operations necessary to edit a show, freeing you to concentrate on making creative decisions.

CENTRAL CONTROLLER



CMX uses a microcomputer, called the Central Controller, as the executive element of the 330XL system.
You might think of the Central Controller as the brains of your CMX editing system. It supervises communications between all the pieces of equipment and it coordinates the varied activities that take place during an editing session.

The Central Controller operates in an "interactive" mode. This means it stays in constant dialogue with you, displaying questions and messages on the edit screen so that procedures run smoothly.

The Central Controller carries out the following responsibilities:

- Stores the Operating Program and Edit Decision List.

- Receives and interprets instructions you enter on the Edit Console keyboard.

    1. Displays these instructions on the edit screen for your reference.

    2. Sends instructions out to other system components.

    3. Schedules activities so that no lesser function interferes with a more important task.

- Controls the Line Printer, Reader/Punch, and Floppy Disk Drive.

- Controls the Intelligent Interfaces (I^2s) connected to VTRs, VCRs, ATRs, switcher, and other teleproduction devices.

  1. Continually verifies time information with each I^2.

  2. Controls color framing.

  3. Sends out operational instructions for each I^2 to implement on its respective teleproduction device.

  4. Sends out edit start time and duration for each event to the I^2s.

CENTRAL CONTROLLER FRONT PANEL

The following LED (light-emitting diode) indicators are located on the front panel of the Central Controller.

- **RUN** LED
  Indicates the computer is in the processing mode. When the computer is halted, this light goes out.

- **POWER ON** LED
  Indicates the computer is turned on and has power applied to it.

INTELLIGENT INTERFACE (I^2)

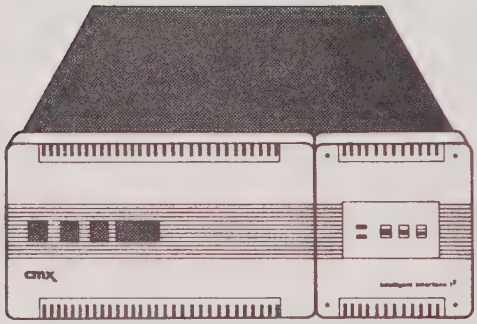
Each teleproduction device is interfaced to the Central Controller computer by means of an Intelligent Interface. The I^2 (pronounced "I-squared") has a microprocessor that is specially programmed to control the unique characteristics of each type of VTR, VCR, ATR, or switcher.

The I^2 unit itself is in a rack-mountable chassis containing the circuit cards that carry out instructions sent by the Central Controller.

While the Central Controller tells the I^2s what to do and when to do it, the I^2 figures out how to get the job done for the particular teleproduction device it is interfaced to. This distributed processing concept allows the 330XL system to handle up to five teleproduction devices concurrently.

By delegating machine control and reporting functions to the I^2s, the Central Controller is free to concentrate on more important tasks that increase speed and efficiency.

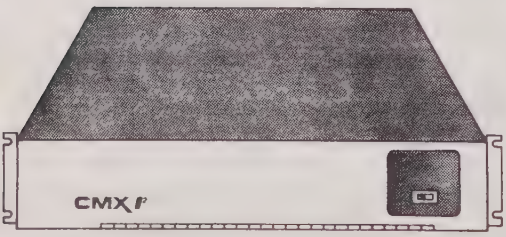
CONFIGURATIONS AVAILABLE



Single I^2

- **Single I^2** - The chassis for this configuration holds the circuit cards for one I^2 for a device.

- **Multi-I^2/Superkit** - The chassis for this configuration holds from one to four I^2s for serially controlled devices, dependent on 1) the type of device the interface is for, and 2) what accessory boards may be in the chassis. In some cases, VTR, ATR and Effects Switcher I^2s may be contained in one Multi-I^2 chassis.



Multi I^2

TYPES OF I^2S

There are three types of I^2s :

- **The VTR I^2** - This I^2 takes into account acceleration ratios, braking dynamics, reel inertia, and lock-up time for the specific type of VTR or VCR to which it is connected.

- **The ATR I^2** - This I^2 functions in the same manner as the VTR I^2.

- **The Effects Switcher I^2** - This I^2 controls one mix effects bank, downstream fader, and audio bank. According to the instructions sent out by the Central Controller, the Effects Switcher I^2 automatically sets up the crosspoints for the desired video and audio sources for each edit. (This type of I^2 is not used in a cuts-only system.)

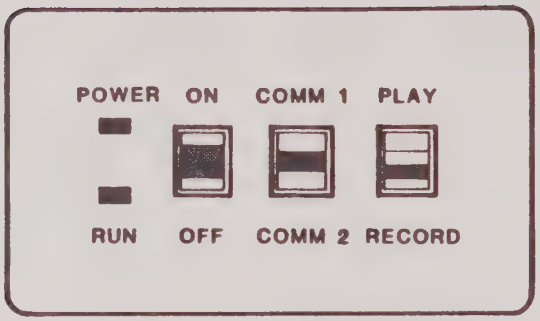
  For advanced effects switchers such as the Grass Valley E-MEM™, the I^2 also triggers the memory registers. Once effects have been stored in the switcher memory registers, the 330XL can be programmed to instruct the I^2 to trigger these effects in reference to specified time code locations on the Record VTR. (See Switcher Memory Section for more details.)

SINGLE I^2 FRONT PANEL

On the front panel of each I^2 is a label that tells what type of teleproduction device it is connected to.

On the left side of the label is the channel number of that particular I^2. This channel number is important when you initialize the system and make channel assignments (see Initialization Section).

There are three switches and two LED indicators on the front panel of the I^2, as shown on the following page.



The function of each switch and indicator on the I^2 front panel is as follows:

ON/OFF - This is the power switch for the I^2. When the switch is set to the ON position, the red LED labeled POWER will light.

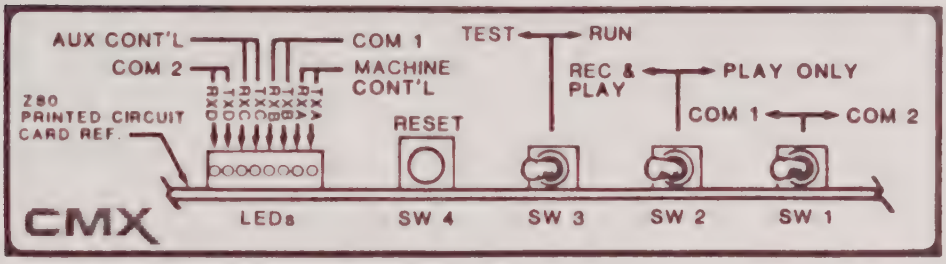
COM1/OFF/COM2 - This switch is used to select the desired communication channel between the I^2 and the Central Controller. This function makes it possible to use the I^2 and associated peripherals alternately with two separate editing systems. The green LED labeled RUN will be lit when the switch is in the COM 1 or COM 2 position. The absence of the RUN light when the switch is in either of those positions indicates that the CPU is not running and the I^2 has an LOS (loss of signal). To restart the I^2, turn the COM switch Off and then back to its assigned channel.

PLAY/REC - (This switch does not appear on the Effects Switcher I^2.) When this switch is in the PLAY position, the record and edit functions of the ATR/VTR are disabled. Turning the switch to the REC position enables the record and edit functions.

MULTI I^2 FRONT PANEL

ON/OFF - This is the power switch for the I^2. The switch is lit when set to the ON position.

MULTI I^2 SELECTION SWITCHES



The function of each switch and indicator on the I^2 board is as follows:

SW 1 : COM1/COM2 - This switch is used to select the desired communication channel between the I^2 and the Central Controller. This function makes it possible to use the I^2 and its associated peripheral with two separate editing systems. If your system uses the Superkit, SW 1 should always be set to the COM 2 position.

SW 2 : PLAY/REC - (This switch has no function on the Effects Switcher I^2.) When this switch is in the PLAY position, the record and edit functions of that ATR/VTR are disabled. When the switch is in the REC position, the record and edit functions are enabled.

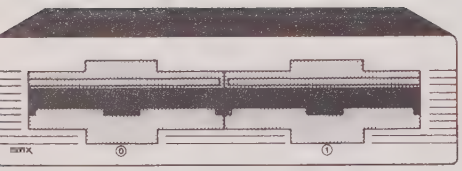
SW 3 : TEST/RUN - This switch selects the TEST or RUN functions. It must be set to RUN if the machine is to be used in the editing system.

SW 4: RESET - This switch restarts and re-initializes the I^2 microprocessor.

RED LEDs : These show the communications status of machine control, COM channels, and auxiliary control. When lit, communications with the appropriate device are running. If off, either a device is absent or communications have been lost.

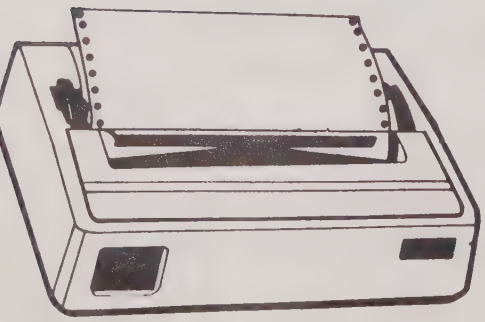
GREEN LED : This is the "Run LED." When not lit, the CPU is not running, which will cause the I^2 to have an LOS (loss of signal).

FLOPPY DISK DRIVE

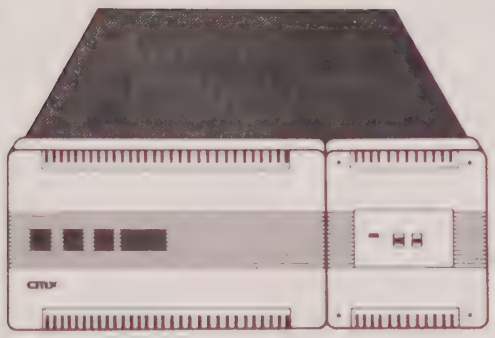


The Floppy Disk Drive allows you to load the main Operating Program (the "Supervisor") and Edit Decision Lists into the computer's memory. It also lets you store an Edit Decision List on floppy disk. For more detailed instructions, refer to the System Start-Up and Program Loading Section.

LINE PRINTER

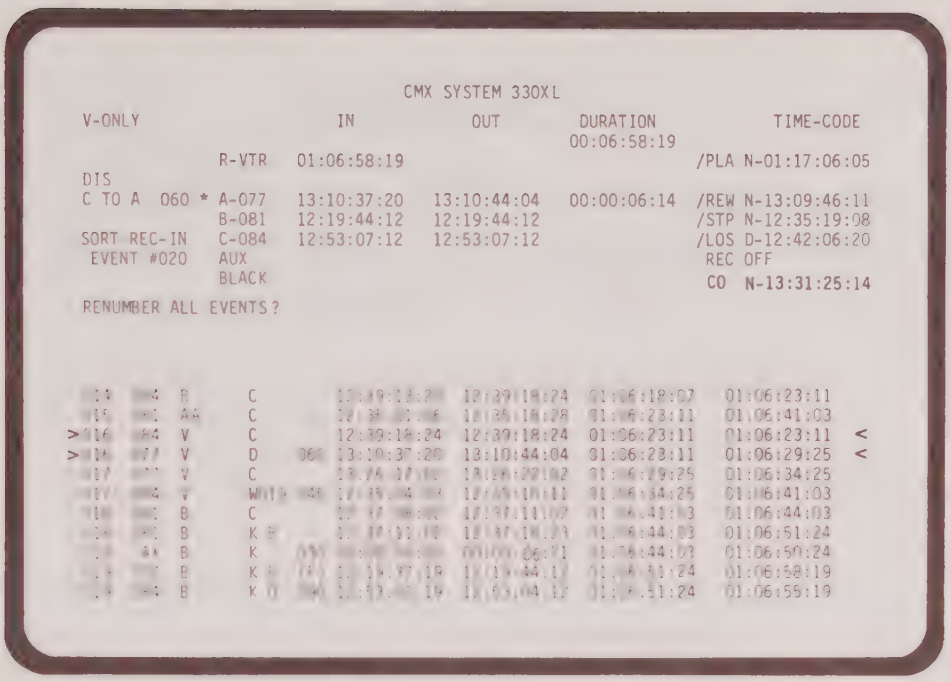


A Line Printer may also be used with the 330XL system to produce printed copies of the Edit Decision List. It is a system option.



CMX A/V SWITCHER

The optional CMX A/V Cuts-Only Switcher is used in some 330XL systems instead of an effects switcher with full signal electronics. The A/V Switcher is controlled from the Edit Console.



EDIT SCREEN DISPLAY

SECTION 3 OVERVIEW

The 330XL edit screen has been carefully designed so that specific information can be recognized by a quick glance at the display.

It's possible for the 330XL to function without an edit screen -- the computer could still respond to all the instructions you enter on the keyboard. But the purpose of the edit screen is to let you know exactly what's taking place in the system. If you were perfectly accurate in issuing commands to the keyboard, you would never have to look at the edit screen.

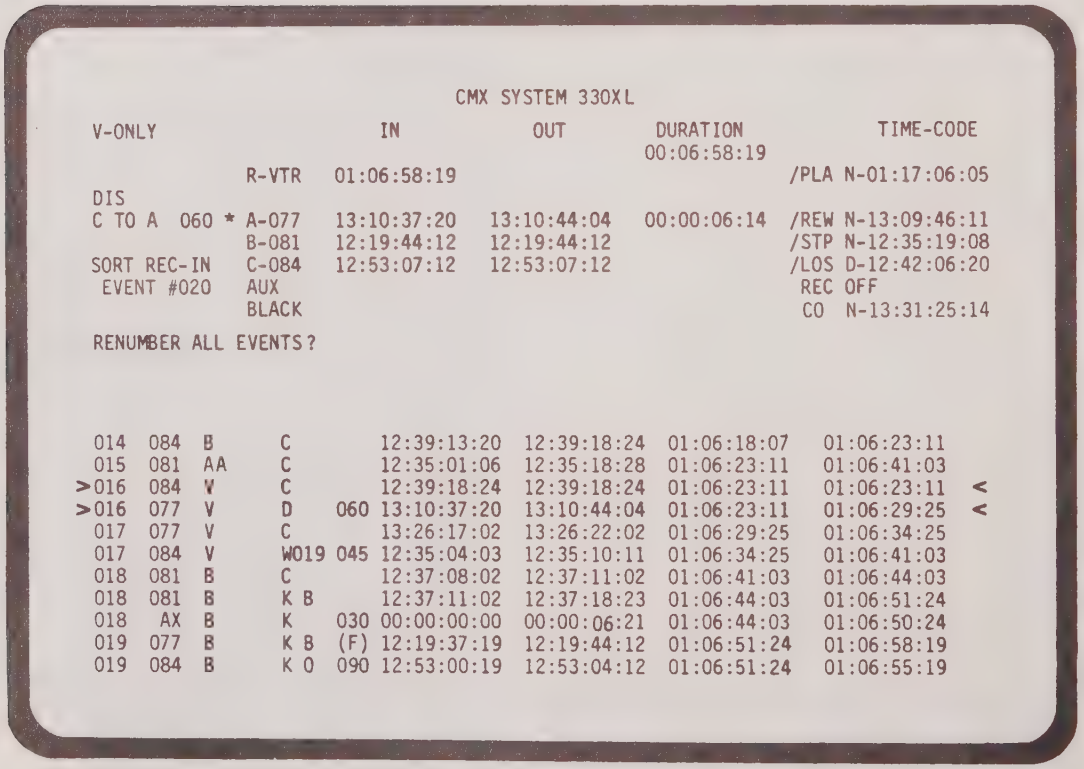
The edit screen is there for you to use as a convenient reference to check the status of the system, the time code locations of the VTRs, information about the current edit, and other events that have already been recorded. You'll quickly learn which section of the screen to glance at when you want to check a specific entry.

Refer to the example of what an edit screen looks like. In this case, all four machines have been assigned, the A, B, C, and R-VTR. AUX and BLACK are always displayed.

As you look at the edit screen, you'll notice there are three main areas:

1. Menu Area
2. System Message Area
3. Edit List Area

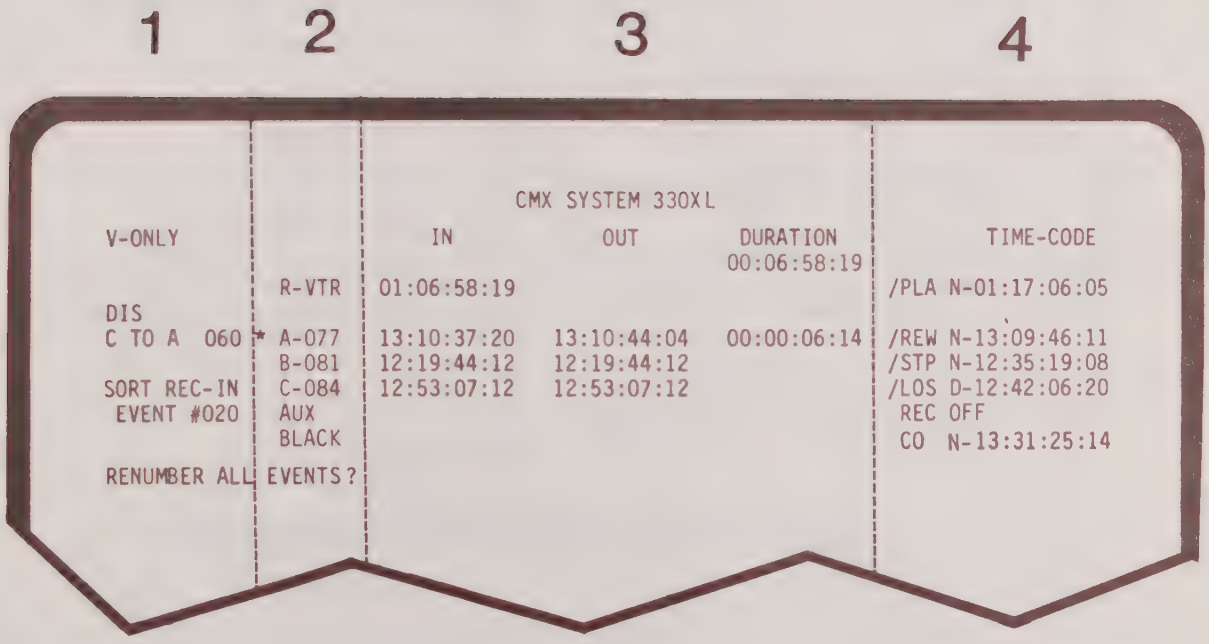
The information displayed within each of these areas will be discussed in detail throughout this section.



MENU AREA

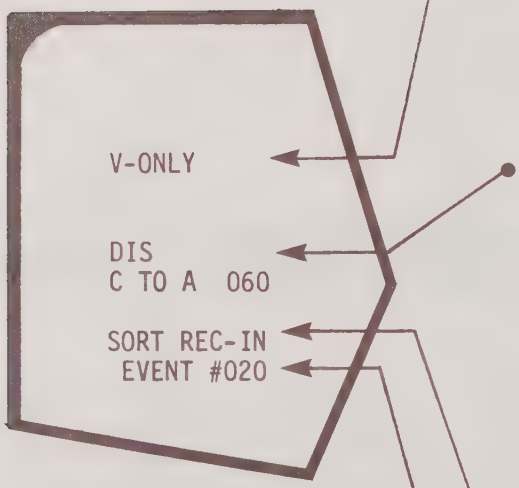
This area displays information that pertains to the current edit you are setting up. The Menu Area is divided into four sections:

1. Function Display
2. Assigned Channel Display
3. Edit Point Display
4. Current Status Display



FUNCTION DISPLAY

The Function Display has four categories of information:



A/V SELECT MODE

1. Audio and Video
   * A 1/V
   * A 2/V
   * A 1/A2/V
2. V ONLY (Video only)
3. Audio only
   * A1-ONLY
   * A2-ONLY
   * A1/A2
4. Split A/V edit

TRANSITION TYPE INFORMATION

1. Type of transition
   * CUT
   * DIS (Dissolve)
   * WIPE and pattern number
   * KEY or KEY OUT
2. FROM and TO sources involved
3. Rate of transition in frames

SORT MODE

1. SORT OFF
2. SORT REC-IN
3. SORT EVNT #

EVENT NUMBER

Displayed for current edit.

ASSIGNED CHANNEL DISPLAY

This section displays all of the Record and playback machines that have been assigned during the Initialization procedures, plus AUX and BLACK. These are all the assigned channels that will be used during the edit session.

Next to each playback machine there is a three-digit reel number, which is also assigned during Initialization.

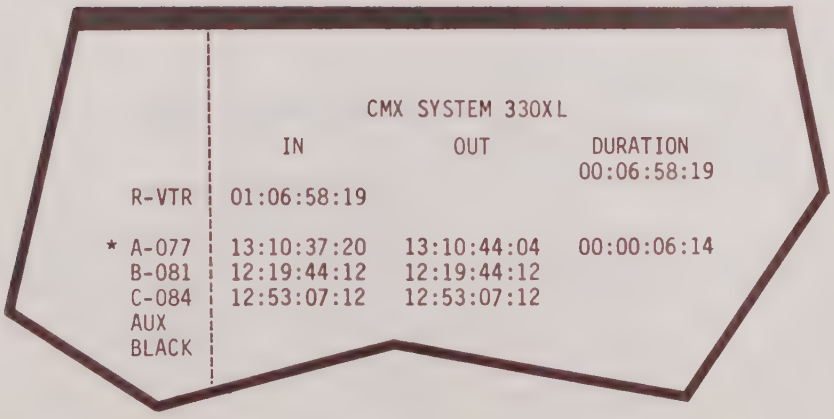
The asterisk (*) next to one of the assigned channels indicates that it is the Active Channel, meaning that commands can be given to it.

EDIT POINT DISPLAY

This is in the middle section of the Menu Area, and it displays the In-Times, Out-Times, and Durations that have been entered for any of the assigned channels.

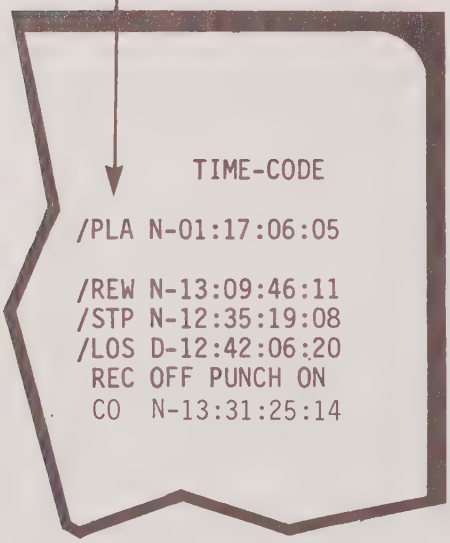
Immediately under the Duration category is the running time of the show that's been edited so far.

At the top of the Edit Point Display is the show title that was assigned during Initialization.



CURRENT STATUS DISPLAY

This section is on the far right side of the Menu Area. It displays information pertaining to the present status of each machine and system modes.



COLUMN 1 - VTR MODE

The first column of information tells you what each assigned machine is doing at the moment. The following is a list of all the possible messages that are displayed in this column. Notice that each message is three letters long.

- **MACHINE MOTION CONTROLS**

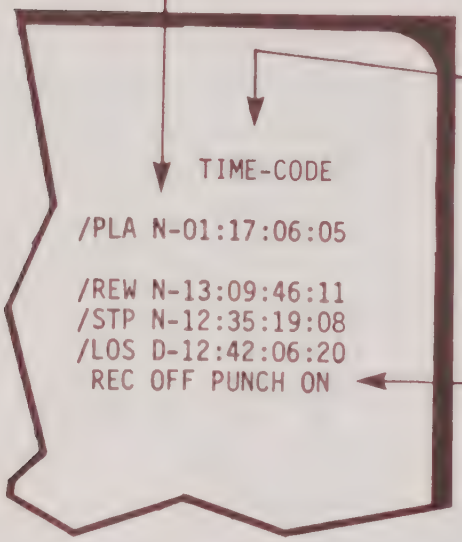
  1. STP Stop
  2. PLA Play
  3. FFD Fast Forward
  4. REW Rewind
  5. STL Stillframe
  6. SLO Slow motion
  7. JOG Jogging
  8. REM Remote (using Gismo)

- **AUTOMATIC MODES**

  1. CUE Cue
  2. SYN Synchronize
  3. LOK Lock (When system is in Record or Preview)

- **VTR ERROR MESSAGES**

  1. LOS Loss of Signal
  2. ESY Error in Synchronizing
  3. ECL Computer Clock Error
  4. EHL Error in Horizontal Lock
  5. ESR Error in Search



COLUMN 2 - TIME CODE MODE

The second column in the Current Status Display is the Time Code Mode indicator. One of two letters will be displayed: an N indicates the videotape on the machine has Non-Drop Frame time code, while a D indicates there is Drop Frame time code.

COLUMN 3 - MACHINE TIME CODE

The last column in the Current Status Display shows the current time code location of each machine.

OTHER CURRENT STATUS DATA

There are two lines of information displayed right below the last machine's current time code display.

- **REC ON** and **REC OFF**
  This message tells you whether the Record function is enabled on the system. If REC ON is displayed, machines will roll when you press CTRL/REC. If REC OFF is displayed, machines will not roll, but the event will be entered into the EDL. (See Section 12 for more details.)

- **DISK ON, DISK OFF, PUNCH ON, PP/DSK**
  These messages tell you that as each edit is entered in the EDL, it will also be stored on floppy disk, punched out on paper-tape (if your system has this option), or stored on both. If either DISK OFF or no message is displayed, the edits are stored only in the computer's memory, and may be lost if a power loss occurs.

- **CONSTANT REGISTER 0**

  The time code number stored in Constant Register 0 is displayed in this area at all times.

SYSTEM MESSAGE AREA

The System Message Area (SMA) is the second major part of the edit screen. It appears in the middle portion of the display below the Menu Area.

This area is where the dialogue occurs between the editor and the system. Questions are displayed in this area; and the responses that you type are entered into the system. Also, messages are displayed here for your information. On the following pages is a breakdown of the types of information that will appear in the System Message Area.

- **DATA ENTRY FUNCTIONS**

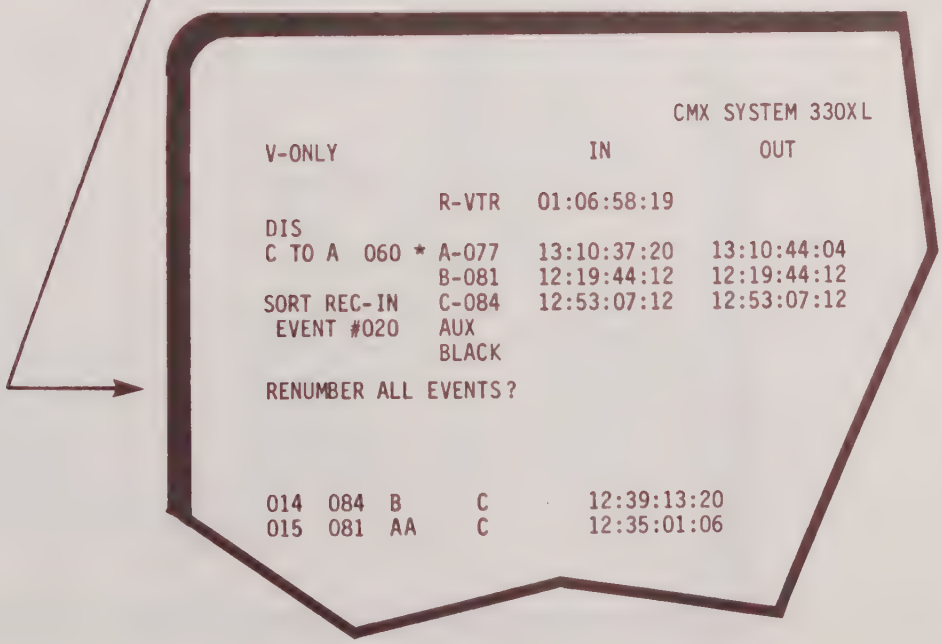
1. Set In, Out, and Duration times
2. Trim In and Out times
3. Transition dialogues
   (Cut, Dissolve, Wipe, Key)
4. Auto-Assembly functions
5. Open Re-edit dialogue
6. Delete events
7. Move events
8. Renumber events
9. Notes
10. Constants
11. Record Start times
12. Report and Display events
13. Maintenance Sections
14. Initialization Sections
15. Load EDL
16. Recall Marks
17. Set up of Sync Roll feature
18. Set up of Jam Sync feature

- **SYSTEM STATUS MESSAGES**
  1. Preview (See Preview Section for full description)
  2. Record
  3. Replay

- **INFORMATIONAL MESSAGES**
  1. Displaying Marks messages
  2. List of Constant Registers
  3. Assembly Complete message
  4. Change Reels message

- **ERROR MESSAGES**
  1. Define Out-Point
  2. Record Error
  3. L-O-S on Channel Ø
  4. ***Sync Loss***

All the above messages and questions will appear in the four lines allocated to the System Message Area.

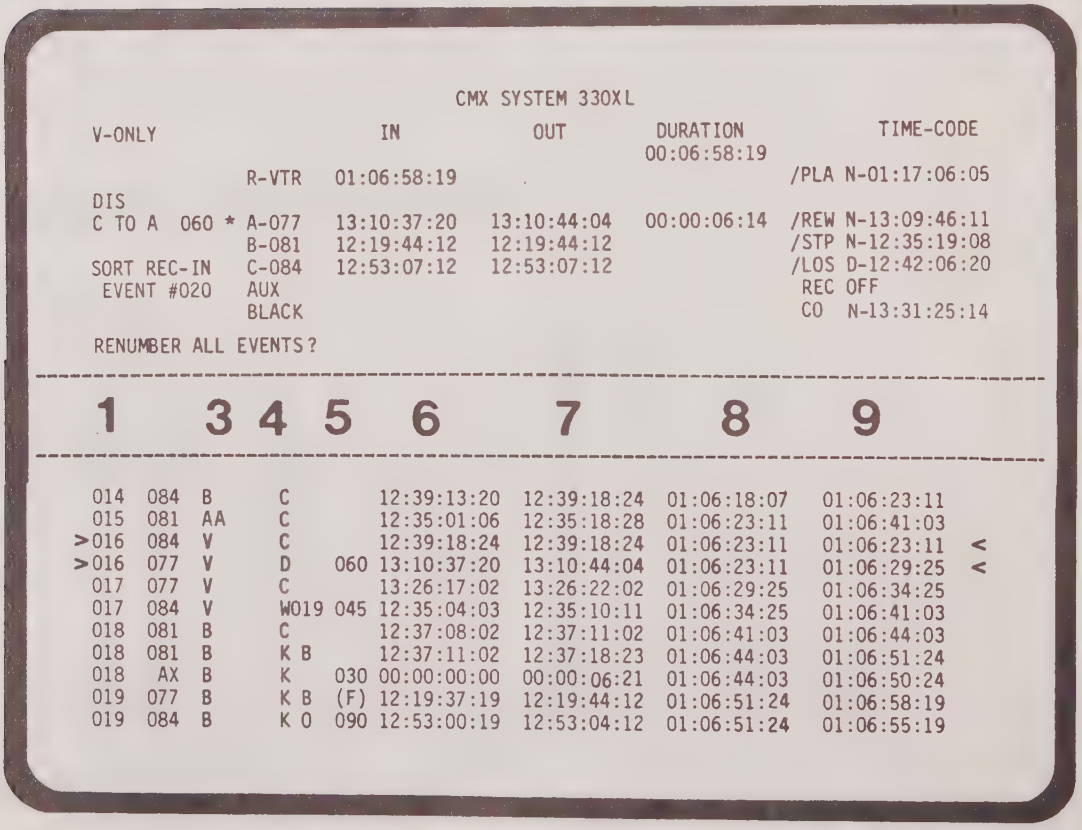


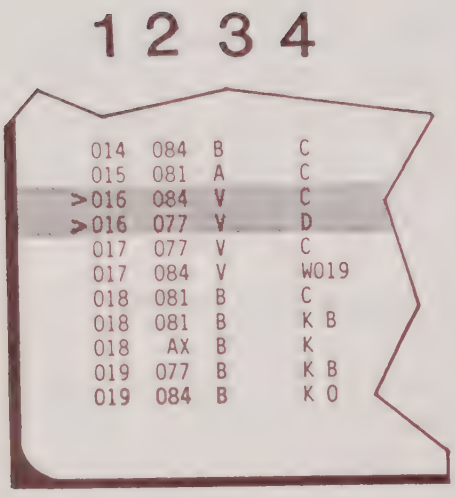
LIST AREA

The last major section of the edit screen is the List Area. Here, all the edits that have been entered into the computer are displayed for your reference. The edit that is brighter than the rest is called the highlighted event.

The way the edits are displayed in the List Area is the same way they appear in the hard-copy print out. This layout of edit information is the CMX Standard Edit Decision List format, which is the accepted standard in the video industry (see figure below).

In the EDL detail illustrations that follow, you'll notice that each column has been numbered at the top of the edit list. Following it is an explanation of the contents within each column.





COLUMN 1 — EVENT NUMBER

The three-digit entries in this column are the event numbers of each edit.

COLUMN 2 — REEL NUMBER

The three-digit entry in this column is the playback machine reel number associated with the edit. This reel number lets the system know where to locate the proper source material. In addition to the reel numbers, two other symbols will appear in this column. BL stands for Black and AX stands for the AUX source.

COLUMN 3 — A/V MODE

The third column tells you which audio and video mode is used for that edit.

A - (Audio 1)
A2 - (Audio 2)
AA - (Audio 1/2)
AA/V - (Audio 1/2 and Video)
B - (A1 and Video)
A2/V - (A2 and Video)
V - (Video only)

COLUMN 4 — TRANSITION TYPE

The fourth column indicates which type of transition is used in the edit. The following is a list of the entries you will see in this column:

C -- Cut
D -- Dissolve

W -- Wipe followed by a three-digit number indicating the Wipe Code pattern number

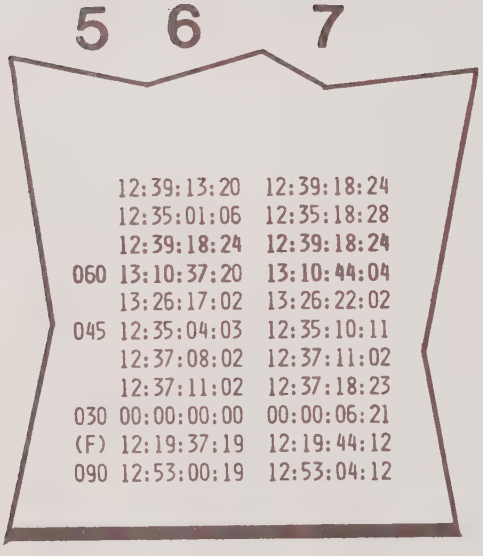
K -- Key In edit

K O -- Key Out edit

K B -- Key background source

COLUMN 5 — TRANSITION RATE

The three-digit number in this column indicates the rate of the transition in frames. An entry of 000 or no entry at all indicates the edit is a direct cut. Dissolves, wipes, and keys are always accompanied by a rate entry in this column. Another entry is (F), which is used with those key edits that have both sources either fading to or from Black.

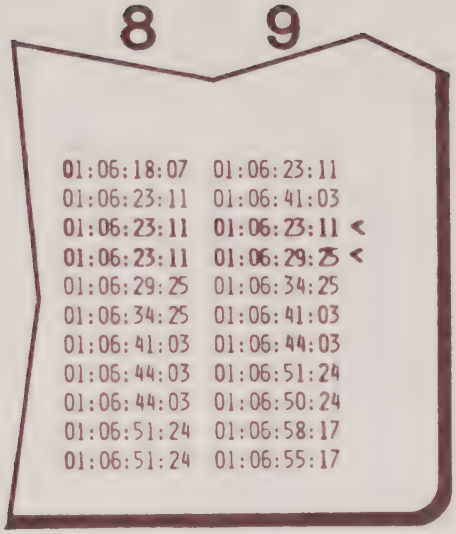


COLUMN 6 — PLAYBACK SOURCE IN-TIME

All the rest of the entries in the next four columns will be eight-digit time code numbers. Column 6 displays the In-time (in-edit point) of a scene. This time code location indicates the first frame of video that will be seen in an edit.

COLUMN 7 — PLAYBACK SOURCE OUT-TIME

This column displays the Out-time (out-edit point) of a scene on the Playback source. Because the In- and Out-times of a scene have been pin-pointed by these time code locations, it will be easy to locate the original scene material if you ever have to go back and make changes to an edit.



COLUMN 8 — RECORD VTR IN-TIME

This time code number indicates exactly where on the Record master videotape a specific scene has been laid down.

COLUMN 9 — RECORD VTR OUT-TIME/DURATION

This time code number tells you where a scene ends on the Record master videotape. If you wish, you can instruct the 330XL to display the total duration of an edit instead by selecting "duration" in Section 7 (SET DUR/OUT) of the Initialization procedures.

CMX 330XL KEYBOARD LAYOUT AND GENERAL PURPOSE KEYS

SECTION 4 OVERVIEW

The layout of the 330XL keyboard is designed to make it easy and convenient to use. The keyboard palette is divided into two sections, with the keys color coded and grouped according to function. The two sections consist of a Numeric Pad on the right and a typewriter-style Main Keyboard in the center.

Most of the keys have specific functions that are described in later sections of this manual. Some of the keys, however, are general purpose in nature and are used frequently throughout your editing sessions. These keys are described in detail in this section.

The following list gives a brief description of the general purpose keys that will be discussed in depth in this section.

GENERAL PURPOSE KEYS: MAIN KEYBOARD

KEY	FUNCTION
	Enables the use of underlined functions ("shifted functions") on dual-purpose keys.
	CRT, shifted function, clears screen of unwanted information and rewrites display. EXIT departs from the current dialogue.
	Stops machine motion and hard copy output, clears the System Message Area of screen. ALL STOP can also be used in place of colons and commas.
	Allows Record, certain Preview modes, and some special functions to be activated.
	NOTE: Shifted function, allows you to store a comment about an edit for later reference. CTRL/NOTE allows deletion of notes. - (Minus) indicates a negative time value.
	Erases incorrectly entered characters.
	Indicates an affirmative response to a question. Also, tells the computer you want to store information in its memory.

Y indicates Yes, or an affirmative respose to a question.

N indicates a negative response to a question.

A indicates "all" in response to a question regarding the range of events to be auto-assembled, printed, displayed, etc. (You can also use the O key to indicate all.)

L indicates the last event in an EDL.

Used in conjunction with another key to repeat a function.

GENERAL PURPOSE KEYS : NUMERIC PAD

KEY	FUNCTION

+ (Plus) indicates a positive time value when used with Record Start, GPI and SW/MEM only.

> EVNT (Highlighted Event) indicates the highlighted event in the edit list display. (When you press this key, the system knows from the context of the operation whether whether you desire the Plus or Highlight function.

- (Minus) indicates a negative time value.

: (Colon) is used in time code data entry.

00 (Double zero) Facilitates time code data entry.

LIST CNST, shifted function, displays values stored in the five Constant Registers.

THE MAIN KEYBOARD

The Main Keyboard is laid out much like a regular typewriter keyboard. Notice that most of the keys have an edit function and a letter or number printed on them. When you press one of these keys, the system can tell from the context of the operation whether you desire the function of the key or its letter or number. For example, when you enter the Title or Notes mode, the system knows you are entering letters and numbers.

There are three keys that may be used as a short cut to tell the computer which events in the edit list you are referring to. These special keys are A, Ø (zero), and L. The use of A or Ø indicates ALL, meaning all the events in the edit list. For example, if you want to auto-assemble or print out all the edits in the list, you would press the A or Ø keys.

The L key can be used to indicate the Last Event in

the edit list. For example, to display the last EDL event on the screen, you would press the DISP key, the L key, and ENTER.

Some keys are dual purpose and have two functions printed on them, with the upper function underlined. To activate an underlined function, you use the key in conjunction with the SHIFT key. To activate the lower function, vou just press the key.

INDIVIDUAL KEY DESCRIPTIONS

SHIFT:

This key activates the underlined function of any dual-purpose key (for example, the CRT/EXIT key). To activate the upper function, in this case CRT, press the SHIFT key just prior to pressing the CRT/EXIT key. You must continue to hold down the SHIFT key while you press the other key. From here on in this manual, the underlined function of a key is referred to as a "shifted function."

CRT/EXIT:

CRT, the shifted function of this key rewrites the edit screen for a clean display.

EXIT allows you to depart from the current dialogue. The displayed message and any information you have typed are erased from the System Message Area of the edit screen.

ALLSTOP :

By pressing the ALLSTOP bar you immediately stop all the machines in motion and terminate any hard copy output in progress. If vou press ALLSTOP while the system is in the Record mode, a clean out edit is made, but the event will not be logged in the Edit

Decision List. Pressing the ALLSTOP bar can be used in place of a colon (:) or comma (,) sign. The ALLSTOP bar also clears the System Message Area when the following types of messages are displayed:

- o List of Constant Registers
- o Error Messages, such as DEFINE OUT POINT or L-O-S ON CHANNEL 0.
- o Informational Messages, such as ASSEMBLY COMPLETE or DISPLAYING MARKS FROM EVENT #010.

CTRL:
This key is used in conjunction with other keys for recording an edit, previewing an edit out-point, deleting notes, and in Jam Sync operations. When you use these functions first press CTRL, then while holding it down, press the other appropriate key.

NOTE:
The shifted function of this key enables you to enter a comment about the highlighted edit event. Simply press SHIFT in conjunction with NOTE, then type your comment. Press ENTER to signal that you are finished entering the comment. The message will be entered below the **appropriate** event on the edit screen. You may enter up to six lines of notes for each edit.

You may delete the notes from the highlighted event by pressing the NOTE key while holding down the CNTRL key.

- (Minus) :
This key is used when you wish to enter negative timecode values. The Minus function of this key is duplicated on the Numeric Pad.

CLEAR:

If you accidentally enter an incorrect letter or digit, you can use this key to erase the entry. The CLEAR key works like the back-space key on a typewriter. If you depress it repeatedly, it will continue to move the cursor back and erase characters from right to left on the edit screen. You can then replace the erased characters with the correct ones.

ENTER:

When you press ENTER, the computer knows to accept and store the data you just typed. For example, when you enter a time code value, you must end the data entry by pressing the ENTER key. If you forget to press ENTER, the system will just sit there waiting for you to enter more data.

In most cases, the ENTER key can be used instead of the Y key to answer a question appearing in the screen dialogue. But pressing the ENTER key is inoperative in the following cases as a safeguard. You must respond by pressing the Y key to indicate an affirmative response.

- o PULL-UP?
- o LIST UPDATE?
- o INITIALIZE DISK (DELETE OLD CONTENTS)?

REPT (Repeat) :

This key allows you to step through certain procedures more quickly. For example, you can step through the Initialization Sections without entering new values. To activate this function, press A (for all sections) when the Initialization Menu appears. Then

for each section, press REPT, then ENTER, and hold both keys down until you reach the end of the Initialization Procedure, or until you reach a point where you want to enter a new value. You can also use REPT in reel assignment and channel assignment procedures.

NUMERIC PAD KEYS

The Numeric Pad is located to the right of the Main Keyboard. It contains the standard keys that you find on all numeric pads. In addition, it has several keys especially designed to simplify time code entry.

IVIDUAL KEY DESCRIPTIONS

+ (Plus) and **– (Minus) :**

These keys allow you to indicate a positive or negative value when entering times. In most functions, you do not use the Plus key when entering positive values. The system assumes a positive value if a negative value is not specified. (The Plus key is allowed only in Record Start, GPI, and Switcher Memory operations.)

The function of the Minus key is duplicated on the NOTE - key on the Main Keyboard. The use of both keys is detailed in Section 10, Entering Time Values.

> EVNT (Highlighted Event) :

Notice that the Plus key also has > EVNT printed on

it. When you press this key, the 330XL automatically knows from the context of the operation which function you desire.

The Highlighted Event function tells the system that you are referring to the highlighted event in the Edit Decision List. In certain operatons, like Open Re-edit and Recall Marks, you can press the >EVNT key instead of typing in the event number when you want to indicate the highlighted event.

: (Colon)

This key is used in time code entry to indicate you are entering a time code value as opposed to frames.

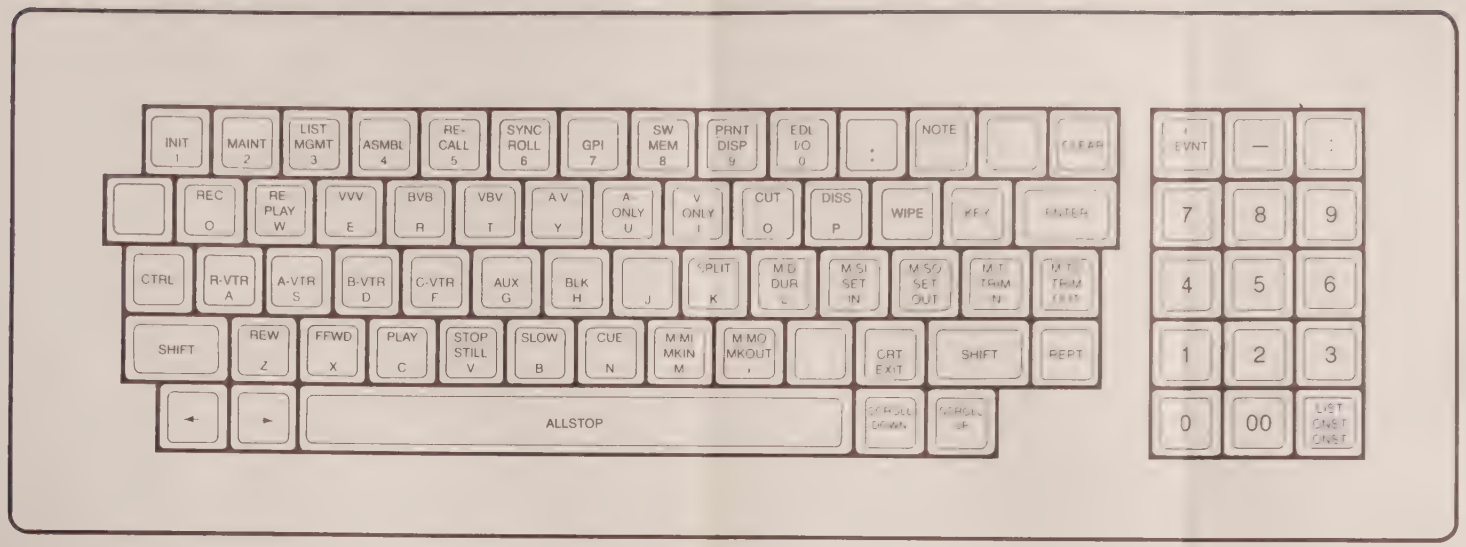
0 0 :

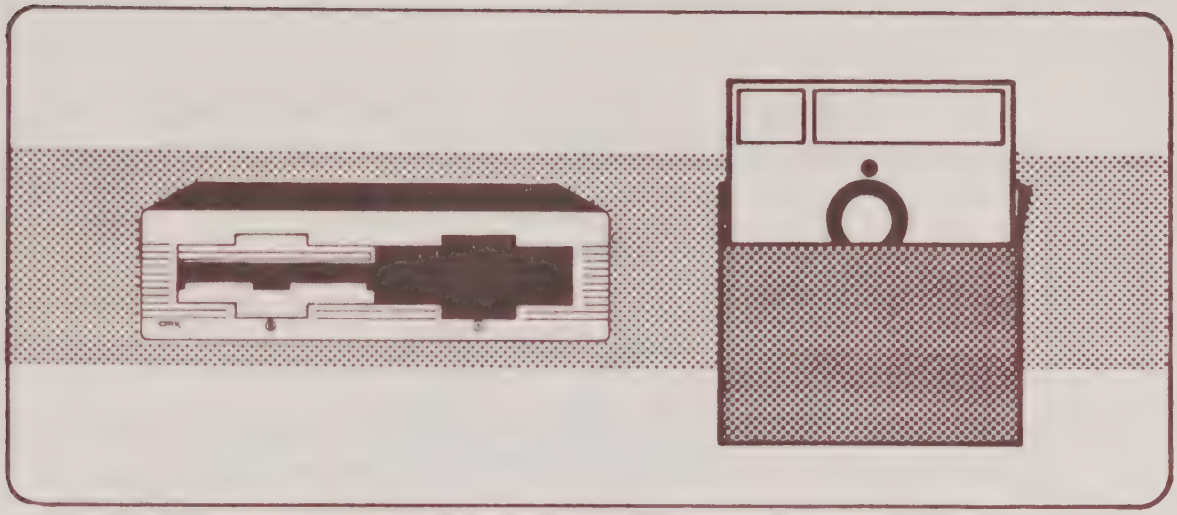
The Double Zero key is provided to facilitate the entry of time code numbers.

LIST CNST/CNST (List Constant/Constant) :

LIST CNST, a shifted function, will display all the values stored in Constant Registers 0 through 4 in the System Message area of the edit screen. The value stored in Constant Register 0 is always displayed in the Menu Area.

The unshifted CNST function allows you to store a time code value in a Constant Register. (See Section 10, Time Entries, for details.)


INIT 1
MAINT 2
LIST MGMT 3
ASMBL 4
RE-CALL 5
SYNC ROLL 6
GPI 7
SW MEM 8
PRNT DISP 9
EDL I/O 0
NOTE
REC O
RE PLAY W
VVV E
BVB R
VBV T
A V Y
A ONLY U
V ONLY I
CUT O
DISS P
WIPE
KEY
ENTER
CTRL
R-VTR A
A-VTR S
B-VTR D
C-VTR F
AUX G
BLK H
J
SPLIT K
M/D DUR
M/SI SET IN
M/SO SET OUT
M/T TRIM IN
M/T TRIM OUT
SHIFT
REW Z
FFWD X
PLAY C
STOP STILL V
SLOW B
CUE N
M/MI MKIN M
M/MO MKOUT ,
CRT EXIT
SHIFT
REPT
ALLSTOP
EVNT
7
8
9
4
5
6
1
2
3
0
00



SYSTEM START-UP AND PROGRAM LOADING

SECTION 5 OVERVIEW

This section describes initial start-up procedures, re-start procedures, and program loading procedures for the 330XL. Since many people don't understand computer programming terminology, this presentation is stated in plain, everyday language.

COMPUTER PROGRAMS

In order to make a multitude of decisions and to keep communications flowing smoothly, the computer must have pertinent information and a detailed set of instructions in its memory.

As you no doubt know, the set of instructions loaded into a computer's memory is called a program. The CMX team of computer programmers work daily on improving existing programs and developing new software to expand the capabilities of the systems.

The CMX Operating Program makes the 330XL uncomplicated and easy to operate, yet capable of the sophisticated operations you have come to expect from CMX editing systems.

The Operating Program, also referred to as the Supervisor, tells all the pieces of hardware what to do and when to do it. This program is loaded from the floppy disk drive.

FLOPPY DISK DRIVE

The floppy disk drive is an input/output device that stores data. It is used in two ways in your 330XL system:

1. To load the Operating Program and diagnostic programs.

   CMX will furnish floppy disks that already have the Operating Program and diagnostic programs stored on them. Special safeguards have been implemented to keep these program disks from accidentally being erased if you inadvertantly attempt to initialize or store an EDL on them.

2. To load and retrieve the Edit Decision List data. (For information on loading and retrieving the EDL, refer to the Edit Data Access section of this manual.)

SYSTEM START UP AND PROGRAM LOADING PROCEDURES

PROCEDURE #1 - INITIAL START-UP

Use this procedure when your system has arrived from the factory and is being set up for the first time or if the power has been turned off.

1. Power on all system elements except the Central Controller.

2. On the front panel of each single I^2, set the COMM1/OFF/COMM2 switch to the desired channel. The green RUN LED should be lit.

   In the Multi I^2, set SW 1 on each I^2 board to COM1 or COM2. The appropriate LEDs on the I^2 board will be lit. (See Section 2 for Multi I^2 switch panel illustrations.)

3. On the front panel of each single I^2 set the PLAY/REC switch to REC for the R-VTR and PLAY for the playback VTRs.

   In the Multi I^2, set SW 2 to REC or PLAY on each I^2 board.

4. Insert the Supervisor program disk in the floppy disk drive.

5. Lower the front panel of the Central Controller to access the power switch, and turn the power on. The system will auto-boot and load the program from the disk.

PROCEDURE #2 - RELOADING THE PROGRAM

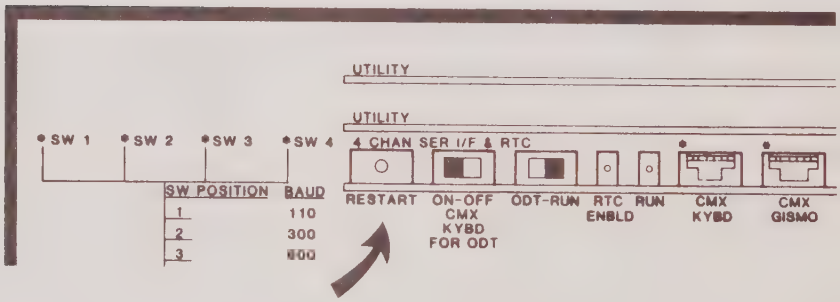
Use this procedure if the power is on and you wish to reload the operating program.

CAUTION :With this procedure, the EDL in memory will be lost. Store the EDL on disk before reloading the program.

1. Lower the front panel to access the card cage.

2. Locate the RESTART button on the left edge of the system circuit board (refer to the Central Controller board configuration decal inside the front panel. Also, the portion of the label which contains the RESTART button is shown below.)

3. Press and release the RESTART button. The system boots and reloads the disk Operating Program.



AFTER THE PROGRAM IS LOADED

After the Operating Program has been loaded, the following "NOTICE TO USER" message will appear on the screen.

CMX 330XL VERSION XXX

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NOTICE TO USER

THE SCREENS, SOFTWARE ROUTINES, AND LOGIC SEQUENCING DISCLOSED IN THIS SOFTWARE ARE THE PRODUCT OF LONG HOURS OF RESEARCH, HUMAN ENGINEERING, AND PROGRAMMING EFFORTS OF CMX CORPORATION ("CMX"), AND CONSTITUTE CONFIDENTIAL PROPRIETARY INFORMATION WHICH IS A TRADE SECRET OF CMX.

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IF YOU AGREE, PRESS ANY KEY TO CONTINUE.

After any key is pressed the Initialization Menu will be displayed.

You can go through the Initialization procedures now if you wish. But to begin editing at this point, the only Initialization procedure that must be performed is Section 2 (Channel Assignments). All other Sections will remain at default values specified by the Supervisor. Refer to the Initialization Section of this manual for the default values.

WHAT HAPPENS IF THE PROGRAM FAILS

When an operating program fails or "crashes" in the 330XL, the system is telling you that, for some reason, a portion of the computer's memory no longer contains a viable program.
The are several reasons for a program to fail: a power surge, a static electricity charge, damage to a circuit card, or possibly a loose circuit card or connector.

When the operating program has failed, the edit screen will not respond to any commands. In some cases, an error message with eight six-digit numbers will be displayed on the edit screen.

FAILURE WITH NO EDIT LIST IN THE MEMORY

If there is a program failure and there is no EDL in the memory, or if the EDL is not important, simply reload the program (See Procedure #2 on page 5-4.)

FAILURE WITH EDIT LIST IN MEMORY

If there is a program failure and there is an EDL in memory, it will be necessary to restart the program. This procedure is different than reloading a program, which is explained later in this section.

You have a choice of using either the Data Terminal keyboard or the CMX Edit Console keyboard to restart the operating program. First, the procedure using the Data Terminal keyboard will be discussed, then the procedure using the Edit Console keyboard.

PROCEDURE WITH DATA TERMINAL

This procedure utilizes the Data Terminal keyboard. To locate switches, refer to the Central Controller board configuration decal located on the inside of the front panel. (The portion of the label that contains the ODT-RUN switch is shown on Page 5-4.)

1. Lower the front panel of the Central Controller.

2. Move the ODT/RUN switch from RUN to ODT and back to RUN.

3. On the Data Terminal keyboard type:

   0G

   (You will not see these characters displayed on the edit screen.)

   The program will restart. It will be necessary to reset the Initialization Sections.

If for some reason the program does not restart, it is still possible to reload the program and retain the EDL. The procedure is as follows:

1. Repeat Steps 1 and 2.

2. On the Data Terminal keyboard type:

   157300G

   (This will not appear on the edit screen.)

The program will now reload. After you respond to the Initialization dialogue, the edit menu and EDL will appear. At this point, it is a good idea to store the EDL on disk.

PROCEDURE WITH EDIT KEYBOARD

This procedure utilizes the CMX Edit Console keyboard. Switch locations are depicted on the Central Controller board configuration decal located on the inside of the front panel. (Also, the portion of the label containing the ODT/RUN and KYBD ODT switches is shown on Page 5-4.)

1. Lower the front panel of the Central Controller.

2. Move the ODT/RUN switch from RUN to ODT and back to RUN.

3. Move the KYBD ODT switch from the OFF position to the ON position.

4. From the CMX Edit Console keyboard type:

   0G

5. Move the KYBD ODT switch back to OFF.

   The program will restart, but it will be necessary to reset the Initialization Sections.

If, for some reason, the program does not restart, it is still possible to reload the program and still retain the EDL. The procedure is as follows:

1. Repeat Steps 1, 2, and 3.

2. On the Edit Console keyboard type:

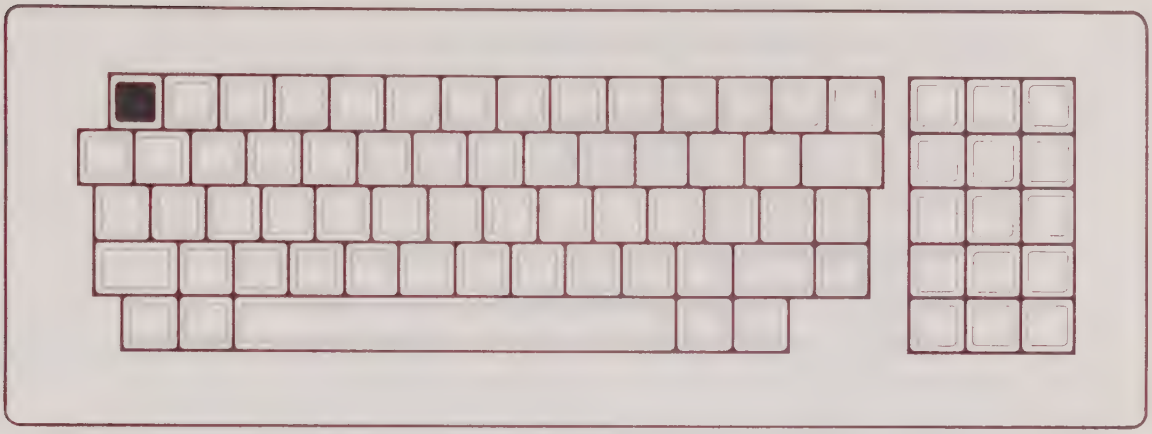
   157300G

3. Move the KYBD ODT switch back to OFF.

   The program will now reload. After you respond to the Initialization dialogue, the edit menu and EDL will appear. At this point, it is a good idea to store the EDL on disk.

NOTE: **After loading the operating program, be sure to remove the program disk from the drive.**

2,1 = Sony 2000 1"
1,2 = BVW 70 - Sony Betacam
1,1 = BVW 15 - Ampex
1,3 - 3/4"
5 - GPI



SECTION 6 OVERVIEW

1,1
1,2
1,3
N
S

THE INITIALIZATION SECTIONS

The Initialization Sections allow you to tailor the 330XL to your particular needs for each editing session. These functions let you set up specific system parameters.

In line with our effort to make the 330XL easy to use, you can access the whole Initialization Menu by pressing just one key. From that Menu, you can select as many Sections as you need to initialize. Screen dialogue leads you through the process.

THE INITIALIZATION MENU

To access the Initialization Sections, push the white INIT key in the top row of the Main Keyboard. A Menu of Initialization Sections will appear on the edit screen. The Menu shows the Section number and name of each Initialization function.

There are differences in the Initialization Sections between NTSC and PAL programs. PAL has some added sections, and lacks Section 6. Menus for both programs are shown on the next page.

INITIALIZATION MENU FOR NTSC PROGRAM

INITIALIZE SECTION:

1) ASSIGN EVENT NO.
2) ASSIGN CHANNELS.
3) ASSIGN REELS.
4) SET PREROLL.
5) SET REACTION COMPENSATION.
6) NON-DROP FRAME/DROP FRAME.
7) SET DUR/OUT EDL DISPLAY.
8) UNUSED.
9) ENTER TITLE.
10) SET SHOW START TIME.
11) ASSIGN CROSSPOINTS.
12) ASSIGN REEL SIZE.
13) UNUSED.
14) SET TIME CODE GENERATOR.
15) GPI RELAY NAMES.
16) GPI RELAY MODE - PULSE, ON/OFF.
17) UNUSED IN NTSC.
18) UNUSED IN NTSC.
19) UNUSED IN NTSC.
20) UNUSED IN NTSC.
21) UNUSED IN NTSC.

INITIALIZATION MENU FOR PAL PROGRAM

INITIALIZE SECTION:

1) ASSIGN EVENT NO.
2) ASSIGN CHANNELS.
3) ASSIGN REELS.
4) SET PREROLL.
5) SET REACTION COMPENSATION.
6) UNUSED IN PAL.
7) SET DUR/OUT EDL DISPLAY.
8) UNUSED.
9) ENTER TITLE.
10) SET SHOW START TIME.
11) ASSIGN CROSSPOINTS.
12) ASSIGN REEL SIZE.
13) UNUSED.
14) SET TIME CODE GENERATOR.
15) GPI RELAY NAMES.
16) GPI RELAY MODE - PULSE, ON/OFF.
17) PAL PAIRING INDICATORS.
18) AUTO 4-FIELD CORRECTION.
19) AUTO 8-FIELD CORRECTION.
20) EVEN RE-EDIT DURATION.
21) REC/PVW 4-FIELD CHECKING.

WHEN TO USE THE INITIALIZATION SECTIONS

There are two ways to respond to the Initialization Menu, depending on your needs at the time.

- When you start up the computer system, or load the operating program at the beginning of an edit session, the Menu will appear automatically. At this time, press the A key or the 0 (zero) key to indicate that you want to set ALL Initialization parameters. You can then step through all sections sequentially. Or, you can enter a range of sections; for example: 10, 12 for sections 10, 11 and 12. You can also use the REPT key to skip over certain sections without entering new parameters, as described in Section 4 on the 330XL Keyboard.

- Or, if you want to change an Initialization parameter at any time during a session, you can press INIT, access the Menu, and press the numeric key for the section whose parameters you want to change. When you press ENTER, the screen dialogue for that section will appear.

DESCRIPTION OF INITIALIZATION SECTIONS :

The following is an in-depth description of each Initialization Section. The Initialization Sections are presented in the order in which they appear in the Initialization Menu. All computer prompts or messages about each Initialization Section are displayed in the System Message Area of the edit screen.

ASSIGN EVENT NUMBER

Initialization Section 1

FUNCTION DESCRIPTION

This section allows you to determine which number you want to assign to an edit event. For instance, if you want to begin numbering your events in the edit list with No. 100:

KEYBOARD INSTRUCTIONS

- Press the INIT key to display the Menu, press the numeric 1 key and ENTER. The edit screen displays:

  EVENT#=

- Press the numeric key(s) to set the event number for the next edit. (In this case, the number 100.)

- Press the ENTER key. On the left side of the Menu Area, the edit screen will display:

  EVENT #100

- The system will start counting new edits entered in the list from this event number. During the edit session, you may change the event number of any edit you are about to record.

- If you change the event number to one that is already in the edit list, the next edit that you record will replace the old edit and retain its event number.

NOTE: The system will always reset its event number to equal the highest number in the EDL plus an increment of one following a recording.

ASSIGN CHANNELS
Initialization Section 2

FUNCTION DESCRIPTION

This section allows you to assign your teleproduction devices (VTRs, VCRs, ATRs, auxiliary inputs, switchers) to perform a specific function during an edit session.

During the Channel Assignment dialogue, you tell the computer which machine is going to be the Record machine and which ones are going to be the playback sources.

As you'll recall from the System Overview Section, each teleproduction device has an I^2 (Intelligent Interface) that carries out the instructions sent from the computer. Each I^2 is connected to a specific channel. You use the channel number to assign a particular machine to perform a function, either as the R-VTR or one of the playback sources. Your CMX 330XL can use either a standard I^2, a Multi-I^2, or the Superkit. With the standard and Multi-I^2 each channel controls one machine. With the Superkit you can control three VTR's or VCR's using only one channel. However, the Superkit cannot use a CMX Time Code Reader. Each VTR or VCR controlled by the Superkit must have its own internal Time Code Reader.

Note: Although the Superkit can control three devices through one channel, the maximum number of devices the 330XL can control at a time is still five devices.

The way the system is designed, any machine in your system may be used as the Record machine or as a playback. Normally, you'll assign machines at the beginning of an edit session, but you may change the assignments at any time. This is particularly handy if the Record machine breaks down, because you can quickly assign a playback machine in its place. (If you do, make sure the switch on the front panel of the I^2 is placed in the REC position. Also, you will have to change the switcher crosspoint assignment, described later in this section.)

TYPES OF CHANNEL ASSIGNMENTS

There are six different types of instructions that you can enter during the Channel Assignment dialogue. First, we will discuss each of these instructions; then we will explain the Channel Assignment dialogue.

1. CHANNEL NUMBER

You can enter the channel number assigned to each of the desired machines. (Zero is never allowed as a channel number.) With the Superkit you can use one channel to control <u>three</u> machines. Your channel assignments can include a mixture of single, multi, and Superkit I^2's. To select a Superkit channel you first press the number of the channel you wish to use. Next, press the comma (,) or space bar (ALL STOP) and then the number of the VTR/VCR (1, 2, or 3). Press ENTER.

To leave channel assignments as they are upon initialization, press the ENTER key for system default.

2. **NO ASSIGNMENT**

Press the N key if you don't want to assign a machine at all. For instance, if your system has only two playback machines, A and B-VTRs, then you can enter a NO response when the edit screen asks you to assign a channel to the C-VTR. This eliminates unnecessary screen clutter.

3. **AUX ASSIGNMENT**

Any channel can be assigned as a secondary auxiliary input. In addition to the dedicated AUX key in the Select Functions, other Select keys can be designated as secondary AUX inputs.

During the Channel Assignment dialogue, type X to indicate AUX instead of entering a channel number. This tells the computer not to look for time code data coming in.

- You can feed a matte camera, character generator, or some other video source that doesn't require time code into an AUX input.

- If all your machines are in use you can enter edit data or clean a list by assigning them all to be AUX channels.

- The NTSC program version allows time code mode (DF or NDF) to be selected for secondary AUX channels by entering N (for Non-Drop Frame) or D (for Drop Frame) following the X (for Auxiliary).

- You can place a 1-inch VTR that produces a recordable stillframe into stillframe and change its channel assignment to AUX by entering X. When you record the edit, the VTR will stay in stillframe.

- Once the Channel Assignment dialogue is completed, AUX assignments with their time code modes will be indicated on the right side of the Menu Area.

4. INACTIVE TIME CODE

Any channel can be assigned as an Inactive time code source whenever you must use videotapes with poor or non-existent timecode.

- During the Channel Assignment dialogue, enter the desired channel number immediately followed by the letter I, which stands for Inactive source. Once all the channels have been assigned, the word INACTIVE will appear to the right of the edit screen in place of the time code readout for that channel.

- You will have to manually park the videotape ahead of the intended edit point by the preroll distance. For instance, if your machine needs a 10-second preroll before it goes into record, then you must park the videotape with no time code 10 seconds ahead of the desired in-point.

- The 330XL system will know not to search or synchronize the machine using Inactive time code. It will place the machine in the play

mode each time you preview or record the edit.

- o Those edits involving Inactive time code will not be accurately entered into the Edit Decision List because no time code information is available.

5. ASSIGN ATR

In the PAL program version, you can tell the system you have an ATR by entering the channel number and then pressing A. The system will not look for PAL parity, since this is not necessary for audio tape.

6. GPI CHANNEL

After you have finished assigning machines, the system will check to see whether any channels are still unoccupied. If it finds an unassigned channel, it will ask if you want to assign a GPI (general purpose interface) device. The message is:

GPI (N) = CHANNEL

Let's summarize the six types of responses you can enter when making Channel Assignments:

1. Desired channel number.
2. N for no channel assignment.
3. X for auxiliary input (followed by N or D if the AUX source has time code).
4. Desired channel number followed by I for Inactive time code.
5. Assign ATR (PAL only)
6. GPI Channels

CHANNEL ASSIGNMENT EXAMPLE

KEYBOARD INSTRUCTIONS

The following pages contain sample CHANNEL ASSIGNMENT dialogues. The first example is for use with the standard or Multi-I^2 configuration. The second example refers to the CMX Superkit. In the standard and Multi-I^2 case, we want to make the following assignments:

R-VTR to be Channel 1
A-VTR to be Channel 2
B-VTR to be Channel 3 with Inactive time code
C-VTR to be an AUX input

WHEN YOU PRESS THESE KEYS:	THE EDIT SCREEN DISPLAYS :
INIT	Initialization Menu
Numeric 2 key	R-VTR (N) = CHANNEL
1 (one) key	R-VTR (N) = CHANNEL 1,
ENTER key	A-VTR (N) = CHANNEL
2 (two) key	A-VTR (N) = CHANNEL 2
ENTER key	B-VTR (N) = CHANNEL
2I (Channel 2 and I for Inactive time code.)	B-VTR (N) = CHANNEL 2I
ENTER key	C-VTR (N) = CHANNEL
X (for AUX input)	C-VTR (N) = CHANNEL X

As soon as you complete the Channel Assignments, the active channels will be displayed in the Menu Area of the edit screen.

If you want to change just one of the Channel Assignments, follow this procedure (let's assume you want to change the A-VTR from an AUX channel to Channel 2):

YOU PRESS THESE KEYS:	EDIT SCREEN DISPLAYS:
INIT	Initialization Menu
Numeric 2 key	R-VTR (1) = CHANNEL
ENTER key	A-VTR (X) = CHANNEL
Type in desired channel number, in this case 2	A-VTR (X) = CHANNEL 2
ENTER key	B-VTR (3) = CHANNEL

The edit screen will continue to display all the VTR channel assignments. Since you only want to change the A-VTR, just press the ENTER key when the edit screen asks for the B- and C-VTR Channel Assignments. Exiting from CHAN ASN necessitates starting over to reset channels. Auxiliary sources will always follow the system reference (DF/NDF) unless you assign them D or N individually.

Assigning channels with the Superkit is very similar to the procedure used with the standard or Multi-I^2. The difference is that three machines can be controlled on one channel. In this example we want to make the following assignments:

Superkit to be channel 2
R-VTR to be Machine number 2
A-VTR to be Machine number 1
B-VTR to be an AUX input
C-VTR to be Machine number 3

WHEN YOU PRESS THESE KEYS:	THE EDIT SCREEN DISPLAYS :
INIT	Initialization Menu
Numeric 2 key	R-VTR (N) = CHANNEL
2 (two) key/comma (,)/2	R-VTR (N) = CHANNEL 2 2
ENTER key	A-VTR (N) = CHANNEL
2 (two) key/comma(,)/1	A-VTR (N) = CHANNEL 2 1
ENTER key	B-VTR (N) = CHANNEL
X (for AUX input)	B-VTR (N) = CHANNEL X
ENTER key	C-VTR (N) = CHANNEL
2 (two) key/comma (,)/3	C-VTR (N) = CHANNEL 2 3

SPECIAL INFORMATION

- Occasionally an LOS (Loss of Signal) will occur on a channel. To re-establish communication between the Central Controller and the I^2s, press SHIFT : (colon), or go through the Assign Channel dialogue (see Page 6-10).

- Special Effects Switchers are assigned to Channel Ø. If communication between the computer and the switcher I^2 has been interrupted, the screen will display:

  CHANNEL 0, LOS

  To re-establish communication, press SHIFT : (colon) or go through the Assign Channel dialogue.

ASSIGN REELS

Initialization Section 3

FUNCTION DESCRIPTION

This function lets you assign a reel number to identify the videotapes you work with on a show.

Reel assignments play an important role when an edit decision list is auto-assembled. The edit list is designed so that during Auto-assembly, the system looks for the reel numbers used in each event.

You don't have to worry about whether a reel was originally loaded on the A-VTR or B-VTR, but after you load a tape, remember to assign its correct reel number to the proper playback machine. This is the only way the 330XL can identify a reel when auto-assembling an edit list.

SPECIAL INFORMATION

- You can assign any reel number between 1 and 253 and from 1B to 253B, using the B suffix.

- Reel numbers are displayed on the edit screen in the Menu Area just to the right of each playback source.

KEYBOARD INSTRUCTIONS

To access Assign Reels, press the INIT key, the numeric 3 key and ENTER. The System Message Area will display each playback machine in sequence starting with :

A-VTR=REEL

- If you are satisfied with the reel number displayed by the A-VTR in the Menu Area, then press the ENTER key and the screen will step to the B-VTR.

- If you want to change it, type in the desired reel number and press the ENTER key. The reel number for the A-VTR will now be changed to the desired entry. The edit screen will continue to ask you for verification of the reel number assigned to each playback machine.

SET PREROLL
Initialization Section 4

FUNCTION DESCRIPTION

Preroll is the amount of time it takes for machines to lock up and stabilize before going into the Record mode. The system parks videotapes ahead of the edit in-point by the preroll distance you establish when you initialize this section.

The system is automatically preset for 5-second preroll. You can enter a new preroll time ranging from 60 to 900 frames (in PAL, 50 to 750 frames). This is equivalent to 2 seconds to 30 seconds. The amount of preroll time you establish depends on the VTRs you are using.

KEYBOARD INSTRUCTIONS

- When you press INIT, the numeric 4 key and ENTER, the System Message Area will display:

  PREROLL (150) =

  If you are satisfied with that amount, press the ENTER key.

- If you want to change it, enter a new value in frames (not seconds). Press ENTER to store the preroll time in the computer's memory.

SET REACTION COMPENSATION TIME

Initialization Section 5

FUNCTION DESCRIPTION

Because the time required to respond varies from person to person, the system allows you to select a reaction compensation time.

You use this feature when you are viewing footage and using the MARK IN and MARK OUT keys to establish edit points. It allows you to compensate for the delay that occurs between the time your eye sees the desired edit point and the time your brain tells your finger to push the key.

The function only works in the normal play mode forward and backward. The system is automatically set for no reaction time, but you can enter any value up to 15 frames.

KEYBOARD INSTRUCTIONS

When you press INIT, the numeric 5 key and ENTER, the System Message Area displays:

REACTION (000) =

- If you want no reaction time compensation, press ENTER.

- If you want to establish a new reaction time type in the desired number of frames. Press ENTER to store the value in the computer's memory.

Reaction compensation is active only when the machine is in the play mode, not when it is in stop, stillframe, fast or slow motion modes.

NON-DROP FRAME / DROP FRAME

Initialization Section 6

FUNCTION DESCRIPTION

There are two types of SMPTE time code used in the U.S. and in other countries using the NTSC system: Drop Frame and Non-Drop Frame. The system can keep track of mixed time codes.

The NDF/DF function allows you to establish the Time Code Mode (also referred to as Frame Code Mode), which is determined by the type of time code used on your Record master videotape. If you set the Frame Code Mode properly, then the system will compute all times correctly.

If you don't know which type of time code is on a videotape, play it for a few seconds. In the Current Status Display on the edit screen, just to the left of the time code, you will notice a D for Drop Frame or an N for Non-Drop Frame appear.

KEYBOARD INSTRUCTIONS

- Once you determine the type of time code on the R-VTR, press INIT, the numeric 6 key and then ENTER. The system is preset to Non-Drop Frame. The System Message Area displays:

  NON-DROP FRAME

- If that is the time code used on your R-VTR press ENTER.

- If you want to change it, answer N for NO and the message will display:

  DROP-FRAME

By pressing the N key, the message will toggle back and forth between the two types of time code. Press ENTER to establish the type of time code in the computer's memory.

NOTE: The Time Code Mode affects the type of time code entered in the AUX and BLACK channels, and the Record In and Out columns in the EDL.

Many editors use AUX and BLACK as a calculator to add and subtract time code. Just remember that those two channels will reflect the type of time code established by the Time Code Mode. You only have to worry about this when you use one type of time code on your playback machine and the other type on the R-VTR.

If you assign one of the machine channels as an AUX channel, that channel will continue to reflect the type of time code that was on the machine previously assigned. To change the time code mode on AUX, quickly step through the channel assign dialogue in Initialization Section 2, as explained on the bottom of page 6-10.

SET DURATION/EVENT OUT-TIME DISPLAY
Initialization Section 7

KEYBOARD INSTRUCTIONS

This key allows you to tell the system to display either Record out-times or event durations in the last column of the edit list.

- When you press INIT, the numeric 7 key and ENTER, the System Message Area displays:

EVENT OUT-TIME

- The system is preset for the Record Out-times. If you do not want to see event Out-times displayed, press the N key, the message will toggle to:

EVENT DURATION

- Press the ENTER key when the desired message is displayed.

INITIALIZATION SECTION 8 IS NOT USED IN THIS VERSION.

ENTER TITLE
Initialization Section 9

FUNCTION DESCRIPTION

This section allows you to enter a title for the show you are editing. The title will appear at the top of the edit screen and on any hardcopy printout and punch papertape you make of the Edit Decision List.

KEYBOARD INSTRUCTIONS

- When you press INIT, the numeric 9 key and ENTER, the System Message area displays:

TITLE:

- If the title displayed at the top of the screen is satisfactory, push the ENTER key.

- If you want to enter a new title, type in the desired title. It can be up to 72 characters and spaces long. When you press ENTER the new title will appear at the top of the edit screen.

SET SHOW START TIME
Initialization Section 10

FUNCTION DESCRIPTION

This feature is a show duration counter that keeps track of how long your show is. The edit screen will display the length of your show as you enter new edits into the decision list.

KEYBOARD INSTRUCTIONS

- When you press INIT, the numeric keys for 10, and ENTER, the System Message area will display:

  SHOW DURATION STARTS AT R-VTR
  (00:00:00:00) =

- If you want to change the time displayed, type the Record In-time of the first edit in your show. After you press ENTER, the show duration counter will be set at the present show duration. It is displayed in the Menu Area of the edit screen beneath the DURATION heading.

The show duration is based on the edit with the greatest Record Out-time. In other words, if you make a long edit and then go back and make inserts in the middle of the long scene, the show duration counter will reflect the length of the show based on the Record Out-time of the long edit.

If you delete all events in an EDL, the Show Duration counter will automatically reset to Ø and the Event # counter will reset to Event #1.

ASSIGN CROSSPOINTS
Initialization Section 11

FUNCTION DESCRIPTION

This function allows you to assign each playback machine key to a crosspoint on your special effects switcher. Once you assign crosspoints, the computer will know where to look for the output of a machine on the switcher.

Because the R-VTR receives the output of the switcher, no crosspoints are assigned to the Record machine -- only to the playback machines.

The system is preset with the A-VTR assigned to crosspoint 1, the B-VTR to 2, and the C-VTR to 3, but you can reassign crosspoints if you need to.

KEYBOARD INSTRUCTIONS

- When you press INIT, the numeric keys for 11, and ENTER, the System Message Area will display:

  A-VTR (001) = XPOINT

- If that is the crosspoint assignment that you desire, press ENTER and the edit screen will display:

  B-VTR (002) = XPOINT

- If you want to change the crosspoint, enter the desired crosspoint number, 1, 2, or 3. Press ENTER to put the selection in the computer's memory. The System Message Area will continue to display the crosspoint selection dialogue for all assigned machines.

SPECIAL INFORMATION

The switcher crosspoint assignments for your system will depend on how your machines are wired to your switcher inputs. Consult your engineering staff to find out which machine feeds into each crosspoint.

The crosspoint selection function gives you software control over the crosspoint assignment of the switcher. You can assign the output of any playback machine key on the 330XL console to access any crosspoint under CMX control.

ASSIGN REEL SIZE

Initialization Section 12

(This function works only on some 2-inch videotape machines.)

FUNCTION DESCRIPTION

This function allows you to tell the system what reel size you are using on a machine.

Assigning reel sizes gives the system better motion control while searching and cueing machines, thereby reducing the number of aborted edits.

SMALL REEL SIZE refers to reels holding less than 30-minutes worth of tape.

LARGE REEL SIZE refers to reels that hold 30-minutes or more worth of tape.

KEYBOARD INSTRUCTIONS

- When you press INIT, the numeric keys for 12, and ENTER, the System Message area will display:

  A-VTR SMALL REEL SIZE

- If that is the desired reel size, press ENTER and the edit screen will display:

B-VTR SMALL REEL SIZE

- If that is not the desired reel size, press N and the edit screen will toggle to this message:

B-VTR LARGE REEL SIZE

- If that is the desired reel size, press ENTER. The system will continue to ask you for a reel size assignment for each assigned machine.

THERE IS NO INITIALIZATION SECTION 13.

SET TIME CODE GENERATOR (Section 14)

The time code generator can be preset for any I^2 that is equipped with the option. You access the Generator Set function by pressing INIT, the numeric 1 and 4 keys, and ENTER. The following message will be displayed:

SET TIME CODE GENERATOR R-VTR?

This dialogue expects a Yes (Y) or No (N) response. Do not press ENTER.

If you answer No, the dialogue will step to the playback sources in sequential order. For example:

SET TIME CODE GENERATOR A-VTR?

If you give a Yes response, the following message is displayed:

NON-DROP FRAME?

If you press No, the question will toggle to the opposite mode:

DROP FRAME?

When you see your choice displayed, give a Yes response. The following message is displayed:

TIME CODE VALUE:

Use the number keys to enter the value you want for presetting the time code generator, and press ENTER.

The system will now step to the dialogue for presetting the time code generator on the next playback or AUX source.

NOTE: Only single I^2s equipped with the generator ard or Multi-I^2s that control machines with built-in generator cards can be set without causing the associated channel to LOS.

GPI RELAY NAMES (Section 15) and
GPI RELAY MODE (Section 16)

Initialization Sections 15 and 16 are explained in the G.P.I. Chapter of this Manual.

PAL INITIALIZATION FUNCTIONS

Five of the 330XL Initialization Sections pertain to PAL editing. These Sections, 17 through 21, will be explained next.

KEYBOARD INSTRUCTIONS

If you have a PAL edit system, press the white INIT key, and type one of the following :

1. The letter A, to go through the complete initialization sequence

   or

2. The numeric key for the individual Initialization Section that you want to access, for example, the numeric keys 17 and ENTER

   or

3. The letter P/ENTER, which will take you through the five sections sequentially.

A detailed description of each PAL Initialization Section follows.

PAL PAIRING INDICATORS
Initialization Section 17

FUNCTION DESCRIPTION

PAL Pairing indicators can be displayed when you wish to have manual control of PAL pairing and colour framing. The indicators appear in the Menu area of the edit screen, between the last digit of the reel number and the first digit of the In-Time

column. The indicators show the PAL pair relationship (2, 4, or 8-field) between the playback machine time code and the Record machine time code. The indicators are as follows :

- A plus (+) indicates that one frame (two field) must be added to the displayed edit point to be in correct 8-field relationship with the Record machine.

- A minus (-) indicates that one frame must be subtracted from the displayed edit point to be in correct 8-field relationship with the Record Machine.

- An asterisk (*) indicates that the displayed edit point is on a 4-field boundary. The edit will LOK if recorded, but may not be colour-framed. A two-frame (four-field) trim at this point will place the edit point on an 8-field boundary.

- A space (no indicator on the screen) tells you that the edit point displayed is on an 8-field boundary.

KEYBOARD INSTRUCTIONS

After you have entered Section 17, the following question will display :

PAIRING INDICATORS ON?

- If you want to see the indicators, press Y or ENTER.

- If you do not want to see the indicators, press N. The following message will appear:

PAIRING INDICATORS OFF?

If you respond with Y or ENTER, the indicators will not be displayed.

A QUICK TRIM feature is present to make manual correction easier. When you see the plus, minus, or asterisk on the screen, you can use the Plus and Minus keys as "quick trim " keys.

For example, suppose an edit point is on a 2-field boundary, and a plus or a minus appears on the screen. Just press the appropriate key (+ or -), and one frame (two fields) is added or subtracted.

If the edit point is on a 4-field boundary, an asterisk appears on the screen. Now if you press the plus key or minus key, two frames (4 fields) will be added or subtracted.

AUTOMATIC 4-FIELD CORRECTION

Initialization Section 18

FUNCTION DESCRIPTION

Automatic Entry Correction is for use with the 4-Field Bruch Sequence in PAL editing. In this mode, edits will always be 4-field correct, but might not be colour-framed (8-field) in PAL. When you are editing with 4-FIELD AUTOMATIC CORRECTION, all time code values are automatically made correct by the

CMX System at the time of number entry. This works with all methods of time code entry -- Set In/Set Out, Mark In/Mark Out, Trim In/Trim Out, Durations, Time Transfers, etc.

If you are editing in PAL, you can use Section 17 in conjunction with Section 18.

If you are editing in SECAM, it is treated as having a 4-field sequence.

KEYBOARD INSTRUCTIONS

When you enter Section 18, the following message appears on the edit screen :

AUTOMATIC 4-FIELD CORRECTION ON?

- If you want the system to do automatic 4-field correction, press Y or ENTER.

- If you do not want the system to do it, press N. The following prompt will appear :

AUTOMATIC 4-FIELD CORRECTION OFF?

Now you must do the pairing correction manually. In the Correction Off mode, if Section 17 is ON, you will see the PAL pairing indicators displayed in the Menu area.

AUTOMATIC 8-FIELD CORRECTION
Initialization Section 19

FUNCTION DESCRIPTION

When Section 19 is ON, the CMX System will automatically make 8-field sequence corrections, thus assuring accurate PAL pairing and colour

framing. For example, if you trim the R-VTR by a positive value, the playback machines will be automatically corrected in a positive direction to maintain the 8-field relationship. You will not see any PAL Pairing indicators on the screen.

KEYBOARD INSTRUCTIONS

When you enter Section 19, the following question is displayed :

AUTOMATIC 8-FIELD CORRECTION ON?

- Press Y or ENTER if you want automatic correction.

- If you do not want to use this Section, press N. The following message will appear :

AUTOMATIC 8-FIELD CORRECTION OFF?

If you press Y or ENTER, no automatic correction will be done -- but the CMX System will still be checking the 8-field sequence. If you want to correct the sequence manually, be sure Section 17 is turned ON, so that you can see the 8-field indicators.

EVEN RE-EDIT DURATION

Initialization Section 20

FUNCTION DESCRIPTION

When you re-edit an event and change its duration to an odd number of frames, inserting that event into the EDL could change the previously established relationship between the R-VTR and the playback sources for all the edits following that event in the EDL. But if you force this re-edited event to have an even duration (by subtracting a frame), the relationship of the following edits will not change. This would greatly aid the Auto-Assembly process, for example. If you choose not to let the CMX force the duration, then you must change the pairing relationship of all the edits that follow the re-edited event, using the Record Start function (explained in the List Management Section).

KEYBOARD INSTRUCTIONS

When you enter Section 20, the following question will appear on the screen :

FORCE EVEN LENGTH RE-EDIT DURATION ON?

- If you want the system to force the even-length duration when necessary, press Y or ENTER.
- If you answer No, this question will appear :

FORCE EVEN LENGTH RE-EDIT DURATION OFF?

If you answer Yes or ENTER, the CMX system will not change the duration of a re-edited event automatically, but it will check for an odd duration.

RECORD/PREVIEW 4-FIELD CHECKING
Initialization Section 21

When this Section is ON, the CMX system will check for the 4-field Bruch sequence during Preview and Record modes. The system will not automatically make corrections, but it will stop and ask you each time if you want to make the correction. You can choose to correct the mis-pairing (if present), or attempt the event with no changes.

KEYBOARD INSTRUCTIONS

When you enter Section 21, the following message will de displayed on the screen :

RECORD/PREVIEW 4-FIELD CHECKING ON ?

- If you want the system to check for 4-field sequence during Preview and Record, press Y or ENTER.

- If you answer No, the screen will display :

RECORD/PREVIEW 4-FIELD CHECKING OFF ?

If you press Y or ENTER, the system will check for 4-field sequence, but will not stop and ask you for a correction, nor will it correct automatically.

ADDITIONAL POINTS ON PAL INITIALIZATION

1. The System default for PAL Initialization is :
   - Section 17 ON
   - Section 18 ON
   - Section 20 ON

2. One combination of Initialization Sections is not allowed. Sections 18 and 19 cannot be ON simultaneously. The System prevents this by turning off one section if the editor turns on the other.

3. Sections 17, 20, and 21 are allowed in combination with all other sections.

4. If a playback machine has been initialized as an Audio Tape Recorder, the System will not check for PAL pairing. No corrections will be made to an ATR even when an Automatic Correction mode is On. (To initialize a playback as an ATR, type in the channel number and the letter A during Channel Assignment -- for example, 5A/ENTER. An A will appear in the Time Code Status area of the Menu.)

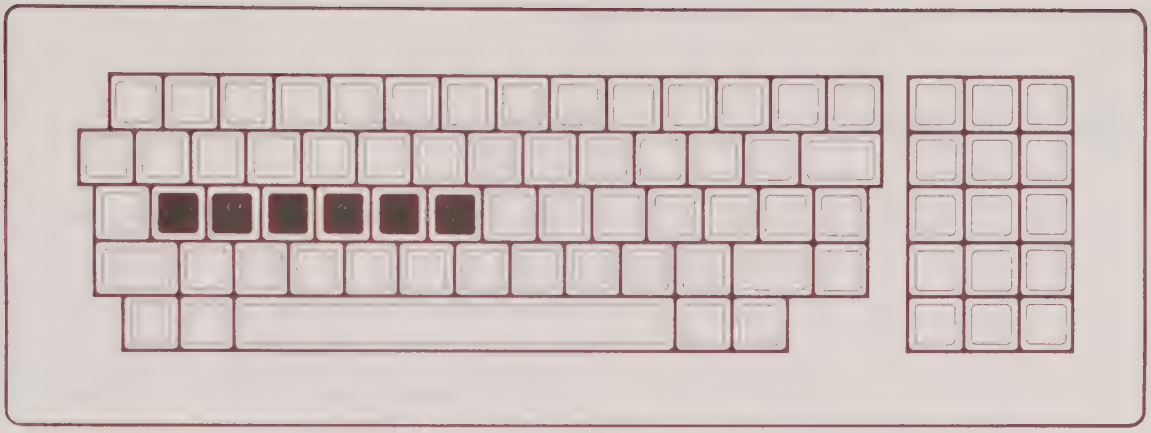
5. It is good practice to turn on Section 21 in conjunction with Automatic Correction Sections 18, 19, and 20. This allows the CMX System to check any edit that may come from tapes with non-standard or mis-paired time code. If the System encounters a mis-paired reel, even if an Automatic Correction Mode is on, the following message will be displayed :

   PAIR ERROR, FROM (___) - SRC IN TIME. SELF CORRECTION?

   If you answer No to this message, another question will appear :

   ATTEMPT EVENT?

Answer Yes to this question and the System will attempt the event. If the machines are able to synchronize and LOK, then it is a mis-paired reel. The System will place a cross hatch (#) in the Time Code Status are of the Menu. From that point, all automatic correction (if desired) for that mis-paired reel will be done correctly by the System.



THE SELECT FUNCTION

SECTION 7 OVERVIEW

The Select function is located on the group of six dark green keys in the middle row of the Main Keyboard. The Select keys allow you to select the video or audio machine, auxiliary input, or black video source that you wish to communicate with. Each Select key is dedicated to a particular source, depending on the channel assignments made during the Initialization procedure.

KEYBOARD INSTRUCTIONS

With the Select keys, you can select one of the following sources:

SELECT KEY	FUNCTION SELECTED
R-VTR	Record Machine
A-VTR	Playback Machine
B-VTR	Playback Machine
C-VTR	Playback Machine
AUX	Auxiliary Input
BLK	Black Video

SPECIAL INFORMATION

ACTIVE CHANNEL

After you press one of the Select keys, the asterisk (*) will move to the left of the desired source in the Menu Area of the edit screen. This selected source is now called the Active Channel, which means you can perform several functions on it, as listed below:

- **MOTION CONTROL COMMANDS:**
  You can issue machine motion commands such as Play, Rewind, and Fast-forward. (See Section 8, Machine Motion Controls).

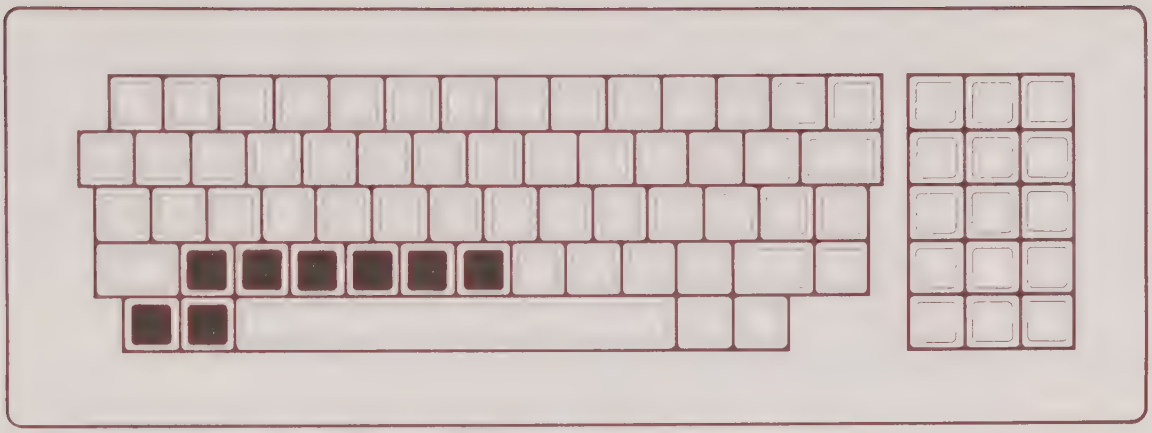
- **TIME CODE ENTRY:**
  Time code data can be entered into the In-time, Out-time, and Duration of an Active Channel. These entries are made by using the Mark, Set, Trim, and Duration functions. (See Section 10, Entering Time Values.)

- **TIME CODE TRANSFER**
  You also use the Select keys when transferring time code numbers from one machine to another. (See Section 10 for details.)

- **EDIT TYPE DATA - CUTS:**
  The source of a cut edit is determined by the Active Channel. In other words, if you want an edit that cuts to a scene on the B-VTR, then press the B-VTR Select key.

- **MULTI-SOURCE EDITS:**
  On dissolves, wipes, and keys, the system will ask you which sources are needed to carry out the desired operation. You press the appropriate Select key. (See Section 11, Transitions.)

- **PREVIEWS:**
  The Active Channel determines the results of certain preview modes. (See Section 12, Preview/Record/Auto-Assembly.)



THE MACHINE MOTION CONTROLS

SECTION 8 OVERVIEW

The Machine Motion Control functions are located on the group of eight light blue keys next to and above the ALLSTOP bar. These keys allow you to send motion control commands to a selected machine.

- You can control the machine motion functions that apply to any standard video or audio tape machine. These functions include rewind, fast-forward, play, stop, slow, and cue.

- You also can control the advanced motion capabilities found on most helical machines, such as tape direction, speed, stillframe, and jog.

- After a Record or playback machine becomes an Active Channel, you can issue any of the motion commands.

- You don't have to go to stop before changing transport commands. For example, you may go from play, to rewind, and then to fast-forward.

- You can also issue transport commands to several machines, one after the other. Press the Select key for the first machine and press a Motion Control key. Then press another VTR Select key for the second machine and issue a motion command to it.

THE STANDARD MOTION CONTROL KEYS

INDIVIDUAL KEY DESCRIPTIONS

These six keys control the usual tape motion capabilities found on all video machines.

REW (Rewind):
This key allows you to wind the tape in reverse direction at a high speed. You can search for an approximate time code location without concern about brake wear or tape stretching.

FFWD (Fast Foward):
This key allows you to wind tape in a forward direction at a high speed. This is useful when you are searching for an approximate time code location.

PLAY:
This key provides normal forward motion of the tape at sound speed (30 frames per second in NTSC, or 25 frames per second in PAL and SECAM).

STOP/STILL:
The STILL function stops the motion of the tape and allows you to view one stillframe. Depending on the type of VTR, this may be one frame or one field.

Pressing STILL more than once jogs the tape (in NTSC) one frame at a time or field-by-field (depending on the machine) in either forward or reverse. On PAL systems the tape advances two frames each time you press STILL.

The shifted STOP function stops the tape motion completely.

SLOW:
This key causes some machines to play at a slow motion speed determined by the VTR manufacturer (usually about 1/5 the normal play speed). If a VTR is not capable of slow motion, no action takes place.

CUE:
When you press the CUE key, the VTR searches and stops at the preroll distance ahead of the in-time displayed on the edit screen. If the timecode is not displayed on the edit screen, the system assumes a zero value and will try to cue to zero.

THE SPECIAL MOTION CONTROL KEYS

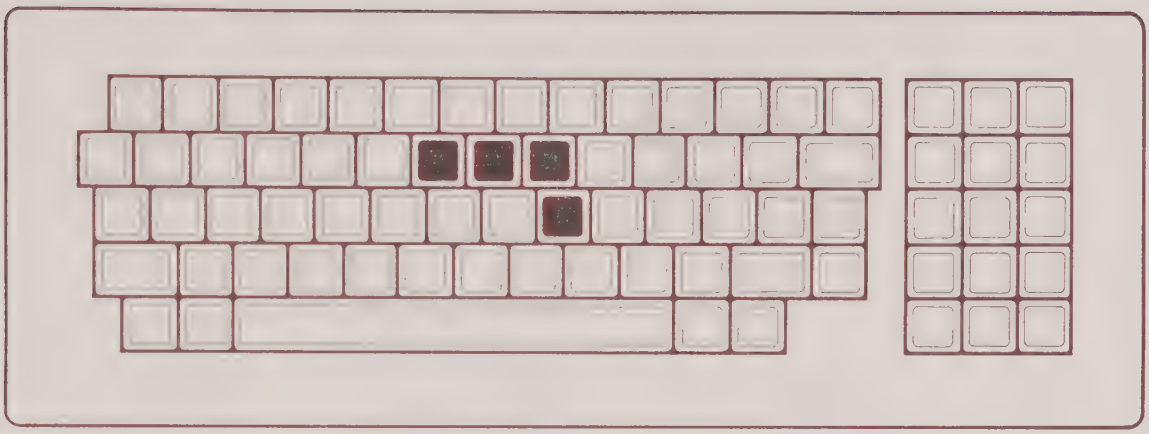
The advanced motion control functions are usually found on helical machines. These two keys are often used in conjunction with each other or in conjunction with certain Standard Motion Control keys. The Reverse key and the Forward key modify the action achieved by certain other motion control commands.

(Reverse Direction)
This key reverses the direction of the tape while the machine is in the jog, play, fast play or slow motion mode. On newer machines you may go directly from

reverse direction to forward direction. On older machines you may have to follow the direction command with the speed control command (Play, Slow, etc.).

(Forward)

This key selects the forward direction of tape travel for the jog, play, fast play and slow motion modes. On newer machines you may go directly from forward to reverse. On older machines you may have to follow the direction command with the speed control command (Play, Slow, etc.).



A/V MODE FUNCTIONS

SECTION 9 OVERVIEW

The A/V Mode functions are located on the four dark blue keys near the middle of the Main keyboard. By pressing the appropriate A/V Mode key, you can select both audio and video (A/V), audio only (A-ONLY), or video only (V-ONLY). You can also choose a split edit (SPLIT), which allows you to delay either the audio or video portion of the tape.

Whenever you turn on the computer for an editing session, the system selects the A/V mode automatically. You may either leave it in that mode, or you may change it by pressing another Edit Mode key. The mode you are in is always displayed in the Function Area in the upper left-hand corner of the edit screen. The system remains in the selected mode until you change it.

INDIVIDUAL KEY DESCRIPTIONS

Three keys allow you to choose how you will edit the tape.

A/V (Audio and Video):
Press this key when you want to edit both the audio and video portions of the tape at the same time.

A-ONLY (Audio Only):
Choose this mode when you want to edit the audio portion only. For example, if you want to lay down a series of audio edits to cover video scenes, you would choose A-ONLY.

The 330XL system will be set for A1/V after the Operating Program is loaded. If you want to add Audio Channel 2, press (SHIFT) A-ONLY. The edit screen displays:

SELECT AUDIO TRACKS:

You respond may by pressing either **1** or **2** or **A** (All), followed by ENTER.

Once the choice of audio has been made, it will not change unless you go through the above procedure again.

V-ONLY (Video Only):
Choose this mode when you want to edit only the video portion of a tape. For example, if you want to make a series of video-only edits against an already recorded sound track, you would choose V-ONLY.

SPLIT key:
The SPLIT key allows you to delay either the audio or the video portion of an edit. When you press this key, the edit screen displays:

SPLIT A/V, DELAY

You respond by pressing either the A-ONLY or the V-ONLY key, depending upon whether you wish to delay the audio or the video portion of the tape.

The system now displays the message:

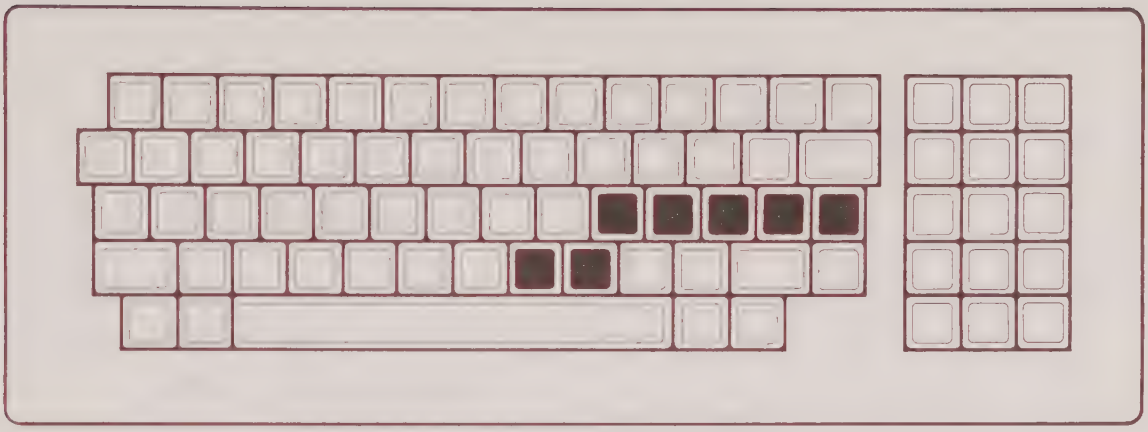
DELAY =

You respond by typing in the desired delay in either frames or in a time duration with a colon (:) sign (2:00 for two seconds.)

After you press the ENTER key, the edit screen will display the delayed mode and duration in the upper left-hand corner. For example, if you chose to delay the video portion for three seconds, this display would appear:

DELAY VIDEO
00:00:03:00

Once you have recorded a single Split Edit, the system will return to the standard A/V edit mode.



ENTERING TIME VALUES

SECTION 10 OVERVIEW

This section explains how to establish and alter the in-time, out-time, and duration of an edit. The four yellow keys and three orange keys involved in Time Entry are located on the right side of the Main Keyboard.

This section is divided into three major areas:

(1) General rules for time entry
(2) Entering times: MARK, SET and TRIM
(3) Time transferring

GENERAL TIME ENTRY RULES

GUIDELINES

The functions that require a numeric entry are divided into three groups. Each group interprets a value in a different way.

o **TIME CODE VALUE ONLY**

The following functions assume you are entering a time code value. Therefore you do not need to use a colon (:) in the entry. The functions that assume a time code entry are:

SET functions
SHOW START
RECORD START (absolute value)

For example, if you enter 300 for one of these functions, the system knows you want 3 seconds, not 300 frames.

- **FRAMES OR TIME CODE**

  These functions assume you are entering frames, unless you enter a colon to indicate a time code value. These functions are:

  TRIM functions
  DURATION functions
  SPLIT A/V DELAY function
  KEY DELAY function
  RECORD START (Offset)

  For example, if you were to enter 300 for one of these functions, it would be converted to 10 seconds. But if you entered 3:00, the colon would indicate you want 3 seconds.

- **FRAMES ONLY**

  Some functions accept frames only. They will not accept a time code value with a colon. These functions are:

  REACTION
  DISSOLVE RATES
  WIPE RATES
  KEY RATES
  PRE-ROLL DISTANCE

Here is a list of other general rules to use when entering times:

- Time codes may be entered without leading zeros. For example, 00:00:42:15 may be typed as 42:15.

- On those functions that require a colon, you only have to enter one colon anywhere in the time code number. For example, 00:10:55:12 can be typed as 105512:. The system automatically inserts colons after each pair of digits when you enter a time code value.

- If you accidentally press the wrong function key (like TRIM IN instead of SET IN), press the EXIT key; then press the correct function key.

- If you accidentally enter an incorrect digit, use the CLEAR key to erase the entry. It is similar to the backspace key on a typewriter.

- When entering data in either the AUX or BLACK sources, you only have to enter a duration because AUX and BLACK are not time code sources. If you do enter an out-time, the system will automatically create a duration because it assumes the in-time is 00:00:00:00.

- You can also use AUX and BLACK as calculators to find out the duration between two time code values. Place the smaller time code value in the in-time and the larger value in the out-time to obtain the difference between the two.

- When you set in-times, out-times or durations for an Active Channel, the system will establish the Time Code mode for that number according to what mode (DF or NDF) that channel is in at that time.

ENTERING TIMES: MARK, SET, TRIM FUNCTIONS

There are three main ways to enter time code values to define edit points.

- You can use the Mark function to enter in-times and out-times "on the fly" while one or more machines are playing.

- You can use the Set function to type in time code data for the in-time, out-time, or duration or one or multiple sources.

- You can use the Trim function to adjust the in-time or out-time of one or more sources.

MARK FUNCTIONS

The four Mark functions are located on the two pale yellow keys in the row above the ALLSTOP bar. They allow you to identify edit points while you view one or multiple VTRs in play, still-frame, fast or slow motion modes. Press MKIN when you see the beginning point of a desired scene. Press MKOUT when you see the point where you want the edit to end. These functions work in Preview and Record modes.

As you press one of the MARK keys, the time code for the desired edit point is displayed as the selected

machines in-time or out-time in the Menu Area of the edit screen. If you press either MARK key repeatedly while a machine is in motion, the edit screen will update the display to reflect the latest time code entry.

If you have established a reaction compensation time during the Initialization Procedure, it will be effective only when the machines are running at sound speed (30 frames/sec in NTSC, 25 frames/sec in PAL or SECAM.) Reaction compensation time is not active when machines are in stillframe, fast or slow motion modes.

MKIN (Mark-In) and
MKOUT (Mark-Out):

These two keys identify the in-time and out-time of an edit when a single VTR or ATR is selected. Before marking an edit point, make sure the desired machine is an Active Channel by pressing its SELECT key.

M/MI (Multiple Mark-In) and
M/MO (Multiple Mark-Out):

These shifted function keys allow you to specify edit points for several machines simultaneously. The times for all machines that are in the Play mode are entered automatically on the edit screen.

The Multiple Mark functions are disabled on those machines that are not moving or are involved in the Automatic System modes: Record, Preview, Auto-Assemble, and Cue.

SET FUNCTIONS

FUNCTION DESCRIPTION

There are six Set functions located on the two yellow keys and the single orange key on the middle row of the Main Keyboard. The SET IN, SET OUT, and DUR (Duration) keys enable you to type in time code values for the in-time, out-time, or duration of a single source. The shifted functions of these keys allow you to do the same for multiple sources.

The Set functions are often used to enter time code data from a prepared list of scene locations. You can also use these keys to transfer time code data from one source to another source. (See Page 10-14.)

NOTE: You do not have to enter leading zeros or use colons with the Set functions — the system assumes that you are entering a time code value.

SET IN and **SET OUT:**
These two keys allow you to enter a time code value for the in-time or out-time of a selected source. Before you begin to use any SET key, make sure the desired source is active by pressing its Select key.

KEYBOARD INSTRUCTIONS

- When you press a SET key, the SET IN key for example, the System Message area displays:

  SET IN

- In response, you type the desired time code value and press the ENTER key. The time code value is now displayed in the in-time of the selected source.
- The procedure works the same way for SET OUT.

M/SI (Multiple Set In) and
M/SO (Multiple Set Out):
These shifted functions allow you to enter a time code value for several selected sources at one time. These keys are useful when you are working with Isoreels that have identical time codes.

KEYBOARD INSTRUCTIONS

- When you press a Multiple Set key, the M/SI key for example, the System Message Area displays:

MULTIPLE SOURCE SET IN

- In response, press the Select keys for the machines that you wish to receive a new time code value. Press ENTER after you have selected all the sources.

- The edit screen will then display:

VALUE=

- Type the in time code and press ENTER. The desired value is now displayed in the in-time of the selected sources.
- The procedure works the same way for M/SO.

DUR (Duration) and
M/D (Multiple Duration):
After you have entered an in-time for one or more sources, a duration for that edit can be entered by using this key. The desired duration is added to the in-time, and an appropriate out-time is calculated automatically and displayed on the screen.

NOTE: For these functions, you must always use a colon if you are entering a time code

value. Otherwise the system interprets the numbers you enter as frames.

KEYBOARD INSTRUCTIONS

- When you press the DUR key, the System Message Area displays:

  SET DURATION

  In response, type in the desired time and press the ENTER key. The duration and new out-time will be displayed for the selected source.

- When you press the M/D key, the System Message Area displays:

  MULTIPLE SOURCE SET DURATION

  Respond by pressing the Select keys for the desired sources, and then ENTER.

  Now the edit screen will display:

  VALUE=

  Type in the time code value and press ENTER. The durations and new out-times will be displayed for the selected sources.

TRIM FUNCTIONS

FUNCTION DESCRIPTION

The Trim functions are located on the two orange keys at the far right of the middle row of the main keyboard. These functions allow you to alter or adjust existing in-times and out-times of one or more sources. In other words, you can use the Trim functions to lengthen or shorten a scene by changing the time a scene begins or ends.

NOTE: The Trim functions interpret numbers as frames. You must use a colon (:) if you wish to indicate a time code value.

ENTERING POSITIVE AND NEGATIVE VALUES

You can enter both positive and negative values for the Trim functions. Since the system assumes a positive values; you cannot use a plus (+) sign. You must, however, enter a minus (-) sign if you want a negative value.

TRIMMING EDIT POINTS

The following discussion describes how positive and negative trims affect edit points.

TRIM IN adjusts the in-time or beginning of an edit.

A positive Trim In value results in a later in-edit point. Because you are adding frames to an in-time, you get a larger (or later) time code value. Hence, your scene will start later if you enter a positive Trim In value. Remember, a plus sign is not allowed for making a positive trim. Enter only the numbers themselves.

A negative (-) Trim In value results in an earlier in-edit point. Because you are subtracting frames from the in-times of an edit, you get a smaller (or earlier) time code value. Hence, your scene will start earlier if you enter a minus Trim In value.

IF YOU TRIM IN -10:00	CURRENT EDIT IN-TIME	IF YOU TRIM IN 10:00
50:00	1:00:00	1:10:00

TRIM OUT adjusts the out-time or ending point of an edit.

A positive Trim Out value results in a later out-edit point. Because you are adding frames to the out-time of an edit, you get a larger (or later) time code value. Hence, your scene will be extended.

A negative Trim Out value results in an earlier out-edit point. Because you are subtracting frames from the out-time of an edit, you get a smaller (or earlier) time code value. Hence, your scene will be shortened.

IF YOU TRIM OUT -5:00	CURRENT EDIT OUT-TIME	IF YOU TRIM OUT 5:00
1:25:00	1:30:00	1:35:00

TRIM IN and
TRIM OUT:

KEYBOARD INSTRUCTIONS

These keys allow you to add or subtract frame or time code values from the in-time or out-time of a selected source.

Before you use the TRIM keys make sure the desired source is an Active Channel by pressing its Select key.

- When you press one of the TRIM keys, TRIM IN for example, the System Message Area displays:

  TRIM IN

- You respond by typing the desired value, including a minus (-) sign if you want a negative value. After you press the ENTER key, the in-

time of the selected source is adjusted or trimmed accordingly.

- The procedure works the same way for TRIM OUT.

M/TI (Multiple Trim In) and
M/TO (Multiple Trim Out):
These shifted functions allow you to add or subtract values from the in-times or out-times of several selected sources.

KEYBOARD INSTRUCTIONS

- When you press a Multiple Trim key, the M/TI key for example, the System Message Area displays:

MULTIPLE SOURCE TRIM IN

- Press the Select keys for the machines that have the edit points you want to trim. Press ENTER after you have selected the sources.

- The edit screen now displays:

VALUE=

- Respond by typing the desired value, including a minus sign (-) if you want to subtract time. After you press ENTER, the in-times of the selected sources will be trimmed accordingly.

- The procedure works exactly the same way for MULTIPLE TRIM OUT.

STORING TIMES: THE CONSTANT REGISTERS

You can store time code values in special memory areas called Constant Registers. You can store positive or negative values, and use them later to establish or alter the edit points of any selected source. The 330XL has five Constant Registers.

Here are some things you need to know when working with the Constant Registers :

- It you enter a time code value from a machine that is not the same type as the system time code, that value will not carry its time code mode with it. Its mode will change to that of the system time code.

- The content of Constant Register 0 is always displayed on the right-hand side of the edit screen at the bottom of the Current Status Display Area.

- The Constant Registers assume a time code value, so you do not need to type colons when entering numbers to be stored.

KEYBOARD INSTRUCTIONS

CNST (Constant)

The CNST/LIST CNST key is located in the lower right-hand corner of the numeric keypad. To enter a new value or change an existing value in a Constant Register, follow these directions :

- Press the CNST key. The edit screen will display:

CONSTANT #

- Type the number of the desired Constant Register, from 0 to 4. If, for example, you press 2, the edit screen might display:

  CONSTANT 2 (00:00:00:00) =

- If the value shown is the value you want, press ENTER, and that value will remain in the register. If you do not want that value, you can enter a new value by one of these four methods:

  1. You can type in a positive or negative time code value. (Don't type a plus sign, because a positive value is assumed unless a minus sign is entered.)

  2. You can enter the In-time of any Playback source by pressing its Select key, followed by SET IN and ENTER.

  3. You can enter the Out-time of any source by pressing its Select key, followed by SET OUT and ENTER.

  4. You can enter the duration of any source by pressing its Select key, followed by the DUR key and ENTER.

- When you have entered one of these choices, the screen will display all of the Constant Registers, including the one with the new time code value.

- To clear the screen of the displayed Constant Registers, press ALLSTOP.

USING THE CONSTANT REGISTERS

You can transfer a value from a Constant Register anywhere that you can type in a time code value. For example, if Constant Register 4 contains the value 33:14, you can enter it like this:

VALUE = C4

The value 33:14 now appears in the appropriate area of the screen, and becomes the in-time, out-time, or duration of the edit.

When you are using the Trim function, you can enter a positive value stored in a Constant Register as a negative value. Do this by entering a minus sign before the Constant Register number. For example:

TRIM IN - C6

Afer you press ENTER, the selected source is trimmed by the negative value from the Constant Register.

TIME TRANSFERRING

The CMX system allows vou to move a time code value from one source to another (for example, the A-VTR to the C-VTR), and from one area of the Edit Menu to another (for example, an out-time to an in-time). You can perform a function such as a trimming operation as part of the transfer.

There are four areas where time transferring can be used:

1. In column
2. Out column
3. Duration column
4. Constant Registers

Here is the procedure for transferring times from one source to another source:

- Press the Select key for the source that you want to transfer a time to.

- Press the key that will carry out your desired time-transfer command :

  -- SET IN, SET OUT
  -- TRIM IN, TRIM OUT
  -- DURATION

- Press the Select key of the Playback source that displays the time code value that you want to transfer.

- Press the appropriate key to indicate which of the edit points in the selected source you wish to transfer:

  -- SET IN indicates the In-time
  -- SET OUT indicates the Out-time
  -- DUR indicates the Duration

- Press the ENTER key to complete the time-transfer sequence.

SPECIAL INFORMATION

You should be aware of these facts before you attempt to move time code from one source to another:

- You can only move time code numbers that are displayed in the Edit Menu or the Constant Registers.
- Remember to first press the Select key of the source to which you wish to transfer a number.
- If the machines involved in the transfer have different time code modes, the transferred time code value will be converted to the mode of the machine to which it is being transferred. This also holds true for AUX.

MOVING A TIME TO ANOTHER SOURCE

This example shows how to move an A-VTR's out-time to a B-VTR's in-time.

	YOU PRESS THESE KEYS	EDIT SCREEN WILL DISPLAY
1.	B-VTR	Asterisk moves to B-VTR to make it an Active Channel.
2.	SET IN	SET IN
3.	A-VTR	SET IN A
4.	SET OUT	SET IN A OUT
5.	ENTER	(time transfer completed)

The B-VTR's in-time is now the same as the A-VTR's out-time.

MOVING A TIME IN THE SAME SOURCE

Transferring the in-time to the out-time (or vice versa) for the same source is an easy sequence. Use the same sequence as described above, except leave out step 3. When you press ENTER, the edit screen will display the same time code value for the in and out-time on the selected source.

TRANSFERRING A TRIM TIME

The sequences just described may seem tricky at first, but with practice, you'll speed right through them. In fact, it's a good idea to experiment with time transfers to get them down pat.

In the example below, we trim the R-VTR's out-time be the duration of the AUX source.

	YOU PRESS THESE KEYS	EDIT SCREEN WILL DISPLAY
1.	R-VTR Select	Asterisk moves to R-VTR to make it an Active Channel.
2.	TRIM OUT	TRIM OUT
3.	AUX Select	TRIM OUT AUX
4.	DUR	TRIM OUT AUX DUR
5.	ENTER	(time transfer completed)

The R-VTR's out-time has been trimmed by the duration time of the AUX channel.

TRANSFERRING A CONSTANT

You can transfer a value in a Constant Register to a selected Source. In Step 3. of the time transfer procedure, press the CNST key and type in the number of the desired register (0 to 4).

In the following example, we move the time in Constant Register 4 to the C-machine duration.

	YOU PRESS THESE KEYS	EDIT SCREEN WILL DISPLAY
1.	C-VTR	Asterisk moves to C-VTR
2.	DUR	DURATION (00:00:00:00
3.	CNST 4	(DURATION (00:00:00:00) = C4
4.	ENTER	(time transfer complete)

The value in Constant Register 4 now appears as the C-VTR's duration.

MULTIPLE TIME TRANSFERS

You can transfer time code values to several sources at once by using the Multiple Set, Trim, or Duration functions. For example, if you want to enter the same time code value into several sources, press the M/SI key. The edit screen will display:

MULTIPLE SOURCE SET IN

Press the Select keys of the desired sources, which in this case will be A-VTR, B-VTR, and C-VTR. When you press ENTER, the edit screen will ask:

MULTIPLE SOURCE SET IN A B C
VALUE =

Press the Select key of the source you are transferring the time code value from and press the ENTER key. Press the appropriate key for the function you desire (SET IN, SET OUT, or DUR), and all three sources will now have this same value in their in-times.

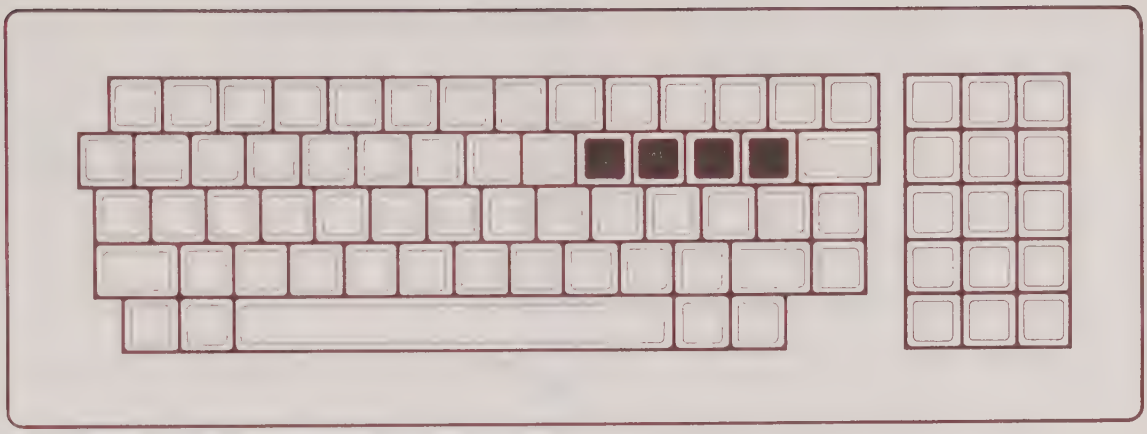
ADDITIONAL TIME-TRANSFER TECHNIQUES

Another convenient time-transfer technique can be used when entering values into the Record Start or Show Start functions.

Let's say you have a time code value entered in the R-VTR's in-time that you would like to transfer to Show Start.

	YOU PRESS THESE KEYS	EDIT SCREEN WILL DISPLAY
1.	INIT/10/ENTER	SHOW DURATION STARTS AT R-VTR (XX:XX:XX:XX)=
2.	R-VTR	R
3.	SET IN	R IN
4.	ENTER	(time transfer completed)

The value in the R-VTR's in-time has been transferred to the Record Start function. You can also transfer a value from a Constant Register to Show Start or Record Start in a similar manner.



THE TRANSITION FUNCTIONS

SECTION 11 OVERVIEW

The Transition functions are located on the four light-green keys on the right side of the Main Keyboard.

This section is divided into five major parts:

1. DEFINING A LEGAL EDIT
2. CUTS
3. DISSOLVES
4. WIPES
5. KEYS

Within the discussion of each Transition type, the following information will be explained in detail:

- What to do after you press one of the Transition keys.
- How to respond to the dialogue in the System Message Area when you call for a dissolve, wipe, or key.
- How to set up the edit times in the Menu Area to achieve the effect you want.
- How the edit will be entered into the Edit Decision List.
- Diagrams of what the edit will look like.

DEFINING A LEGAL EDIT

The following is a list of general rules to guide you when setting up edit times. You may want to refer back to this page as you read the discussion on each type of transition.

IN-TIMES

- The R-VTR must always have an in-time.
- The playback VTRs must always have an in-time.
- AUX and BLACK do not require an in-time because they are not dependent on time code. The system looks only at their total duration and disregards whatever numbers are entered in their in-time and out-time.

OUT-TIMES

- In the Record Off and Re-edit modes, the edit must have an out-time.
- In the Record On mode, you can have open-ended edits.
- In the Preview mode with an open-ended edit, an out-time on the R-VTR or To source can be defined on-the-fly by pressing the MARK OUT key. The machines will continue rolling until you press the ALL STOP bar. The edit can now be recorded.
- In the Record mode with an open-ended edit, an out-time can be defined on-the-fly by pressing

the REC key by itself (without the CTRL key). The system will make an out edit and update the edit list.

- During a recording, only use the ALL STOP bar when you need to abort the edit in progress. The system will go out of record, making a clean out-edit on the videotape. But the edit will not be logged in the Edit Decision List. The edit times will still be displayed in the Menu Area.

- The system will ignore any out-time that is equal to or less than the source's in-time.

DURATION

- You have the option of establishing a duration on either the R-VTR or the Playback To source. You never need to establish the same duration in both the R-VTR and To source.

- The R-VTR duration always takes precedence over the duration of the playback source. When the R-VTR has a duration greater than zero, it will always determine the duration of the entire edit.

DEFINE OUT POINT

The System Message Area will display DEFINE OUT POINT in the following cases:

- If the transition rate is longer than the defined duration for the entire edit.

- If the From source has a duration longer than the duration established on the R-VTR.

- In a split edit, if the delay exceeds the total duration established for the edit.

- In a Key, if the foreground has a duration longer than the background source or R-VTR.

    1. In a Key In, if a duration is established in the foreground source, it must be less than the duration of the entire edit by at least the sum of any fade-in rate and delay duration.

    2. In a Key Out, the duration of the foreground source must be less than the duration of the entire edit by at least the rate of the fade.

- In the Record Off and Re-Edit modes, the edit must have a defined duration.

CUT

FUNCTION DESCRIPTION

The Cut is the most commonly used transition type in editing. You simply press the CUT key and then press the Select key of the source you want to cut to, thus making the To source the Active Channel.

For example, if you want a cut edit to the B-VTR, press its Select key and the asterisk will move just to the left of the B-VTR in the Menu Area. At the same time, on the far left side of the Menu in the Function Area, the edit screen will display:

CUT-B

If you press the Select key for any other playback source, the edit screen will change the cut to the selected source. However, if you have selected a cut to the B-VTR and then press the Select key for the R-VTR, the edit screen will still display the cut to the B-VTR.

When you set up the edit times for a cut, follow the rules on Defining a Legal Edit.

EXAMPLE OF A CUT EDIT

MENU AREA DISPLAY:

```
A/V                          IN            OUT          DURATION

                  R-VTR   01:00:00:00
CUT - B
                  A-001
                * B-002   02:00:00:00   02:00:10:00   00:00:10:00
                  C-003
 EVENT #014       AUX
                  BLACK
```

BREAKDOWN OF DATA IN MENU AREA:

A/V	-	Edit Mode
CUT	-	Transition Type
14	-	Event Number
2	-	Reel Number for B-VTR
1:00:00:00	-	Record VTR In-time
2:00:00:00	-	Play B-VTR In-time
2:00:10:00	-	Play B-VTR Out-time
10:00	-	Edit Duration

EDL ENTRY:

```
014  002  B    C      02:00:00:00  02:00:10:00  01:00:00:00  01:00:10:00
```

BREAKDOWN OF DATA IN EDL:

014	-	Event Number
002	-	Reel Number
B	-	Both Audio Channel 1 and Video
C	-	CUT Transition
02:00:00:00	-	Playback In-time
02:00:10:00	-	Playback Out-time
01:00:00:00	-	Record In-time
01:00:10:00	-	Record Out-time

DISSOLVE

FUNCTION DESCRIPTION

A dissolve is a transition between scenes where the first scene begins to fade out as the new scene begins to fade in. The amount of time the two scenes overlap is called the transition rate.

Dissolves and wipes are very similar in the way they are set up. In both cases there will be a From source and a To source. The From source can be either an extension of the scene laid down in the previous edit or a new scene that will be laid down before the transition takes place. The To source is the scene you are going to after the transition takes place, making it the last scene that is laid down in the edit.

The 330XL can be interfaced to a special effects switcher, which it controls automatically. When you call for a dissolve, the From source is set up on the A bus and the To source is set up on the B bus of the mix effects bank. You must have two playback sources anytime scenes overlap during a transition. When you go to preview or record the edit, the 330XL will automatically control the switcher and VTRs to execute the dissolve at the specified transition rate.

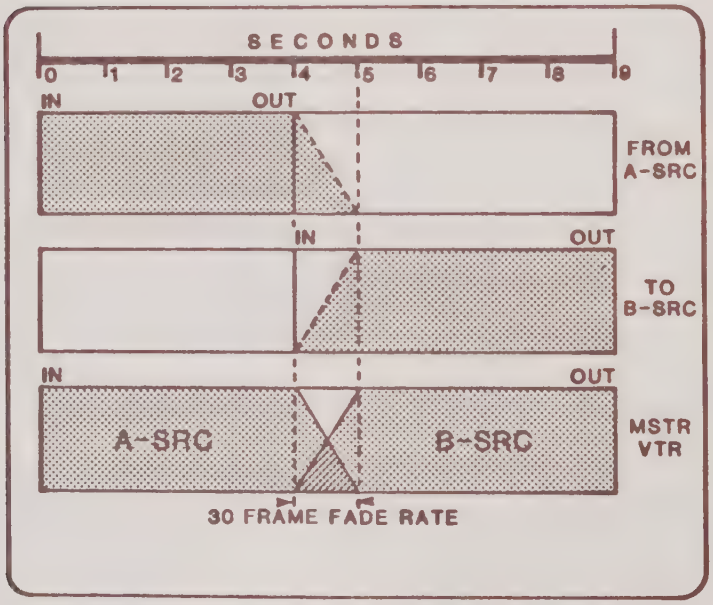
NOTE: If your system has a Cuts-Only Switcher, all edits will appear as cuts on the master videotape. But if you call for dissolves, wipes, and keys, they will still be entered into the EDL and stored on floppy disk (or punched on papertape if you have that option).

In video editing, you don't need "spacer leader" between scenes to sync up A and B rolls as you do in film. Because the 330XL is frame-accurate, time

code entries are used to locate the proper frame to begin a transition.

Dissolve, wipes, and fades are achieved in computer editing by using a technique referred to as a match-cut edit, match-frame edit, or in-frame edit. These terms all describe the ability to electronically splice adjacent frames of video together so that the splice points are not noticeable on the monitor screen.

The following illustration shows how a match-frame edit is used to make a dissolve from the A-VTR to the B-VTR.



Example of a Match-frame Dissolve

- A-VTR has already been recorded onto the R-VTR.

- The new edit begins with the same frame of video from A-VTR, which is the match-frame edit point. The transition of B-VTR begins at this point too.

- As the A-VTR begins to fade out the B-VTR begins to fade in at the rate of 30 frames. When the transition is complete, the Record machine will continue to record B-VTR until the out-edit point.

KEYBOARD INSTRUCTIONS

When you press the DISSOLVE key, the System Message Area asks:

DISSOLVE FROM-

Press the desired Select key to indicate the From source.

- If it is a match-frame edit, press the Select key of the source you laid down during the previous edit.

- If it is a delayed dissolve, it can be either an extension of the previous scene or a scene from another VTR.

- Obviously, it can't be the R-VTR because the Record machine can't dissolve to itself. If you inadvertently press the R-VTR Select key, the system will ignore it.

Once you have pressed the desired From-Source Select key, the edit screen displays:

DISSOLVE FROM- A TO-

Press the desired Select key of the To source, which can be any source except the R-VTR and From source. The edit screen then displays:

DISSOLVE FROM- A TO- B
RATE =

Type in the desired number of frames for the length of the transition.

- The rate of the transition must be from Ø to 255 frames (or 8 1/2 seconds).

- This rate must be in frames only; the system will ignore a time value with a colon sign.

Let's say you type in 30. The completed dialogue will appear as follows:

DISSOLVE FROM- A TO- B
RATE = 30

When you are satisfied with the displayed information, press ENTER. On the left side of the Menu in the Function Area, the following data will be displayed:

DIS
A TO B 030

Once you enter the times for the R, A, and B-VTRs, you may preview or record the edit.

If you decide you want to change the length of the dissolve, just press the DISSOLVE key again and the edit screen will display :

RATE =

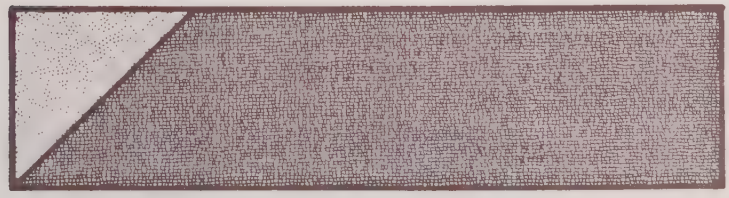
Type in the desired frames and press ENTER. The message displayed in the Function Area will change to reflect the new dissolve duration.

If you decide you want to change either the To or From source of the dissolve, you must press the CUT key, and then press the DISSOLVE key and enter the desired data for the dissolve.

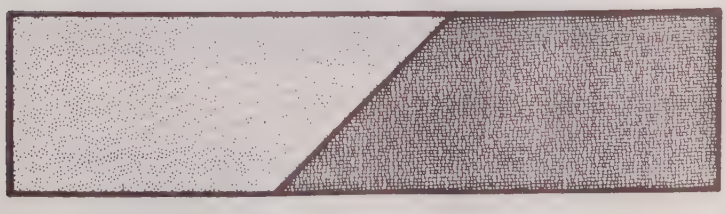
FOUR VARIATIONS OF DISSOLVE EDITS

There are four different ways of programming a dissolve. All of them will look the same, though the process by which they are achieved is different. After setting up the DISSOLVE dialogue, you are ready to begin entering the desired edit times. The dissolve variations depend on how the edit times are set up. The following illustrations depict how the dissolves are different.

Transition at the Beginning



Transition in the Middle



DELAYED DISSOLVES

A dissolve can begin to occur at the edit in-point, or its start can be delayed. If the From Source has no (zero) duration, the dissolve begins immediately at the edit in-point. However, if there is a duration on the From Source, the dissolve does not begin until the out-point of the From Source. See Dissolve Cases Number 3 and 7 on the following pages for examples of delayed dissolves.

REPRESENTATION OF DISSOLVES IN THE EDL

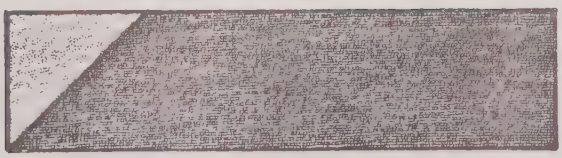
In the EDL, a dissolve has a single event number, but takes up two lines of information. The first line shows the times of the From Source. The second line represents times from the To Source.

Since there are always two playback sources involved in a dissolve, there must be two lines in the EDL.

DISSOLVE CASES

The following Dissolve Cases illustrate how to set up the edit times to achieve these four variations of a dissolve edit. The examples also apply to wipe transitions. All examples pertain to systems operating at a 30fps rate.

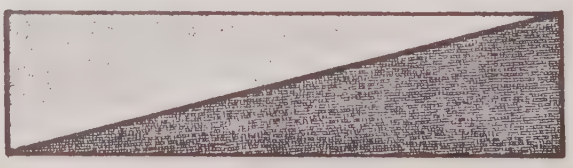
Transition at the Beginning



Transition at the End

Transition in the Middle

Transition Only



DISSOLVE - CASE 1

MENU AREA DISPLAY:

			IN	OUT	DURATION
		R-VTR	01:00:00:00		
DIS					
A TO B	030	A-001	02:00:00:00		
		B-002	03:00:00:00	03:00:10:00	00:00:10:00
		C-003			
EVENT #001		AUX			
		BLACK			

EDL ENTRY:

001	001	B	C		02:00:00:00	02:00:00:00	01:00:00:00	01:00:00:00
001	002	B	D	030	03:00:00:00	03:00:10:00	01:00:00:00	01:00:10:00

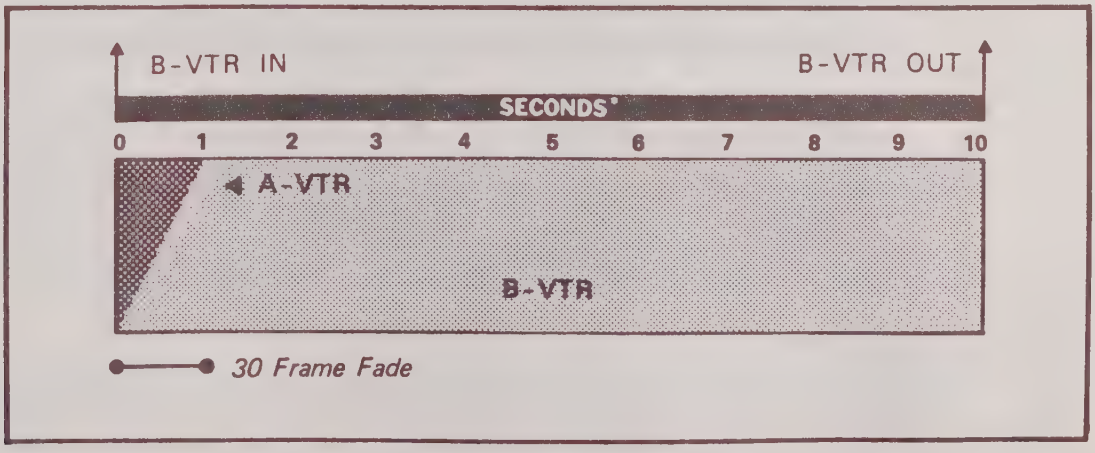
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 30

SPECIAL INFORMATION:

Notice in the Menu Area, only the To source (B-VTR) has a defined out-time. The From source (A-VTR) will begin to fade out at the beginning of the edit because it has no defined out-time. Notice on the first line of the EDL entry, the From source has equal in and out-times. That is because the out-going transition is not reflected in the From source's duration.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

DISSOLVE - CASE 2

MENU AREA DISPLAY:

			IN	OUT	DURATION
		R-VTR	01:00:00:00	01:00:10:00	00:00:10:00
DIS					
A TO B	030	A-001	02:00:00:00		
		B-002	03:00:00:00	03:00:08:00	00:00:08:00
		C-003			
EVENT #002		AUX			
		BLACK			

EDL ENTRY:

002	001	B	C		02:00:00:00	02:00:00:00	01:00:00:00	01:00:00:00
002	002	B	D	030	03:00:00:00	03:00:10:00	01:00:00:00	01:00:10:00

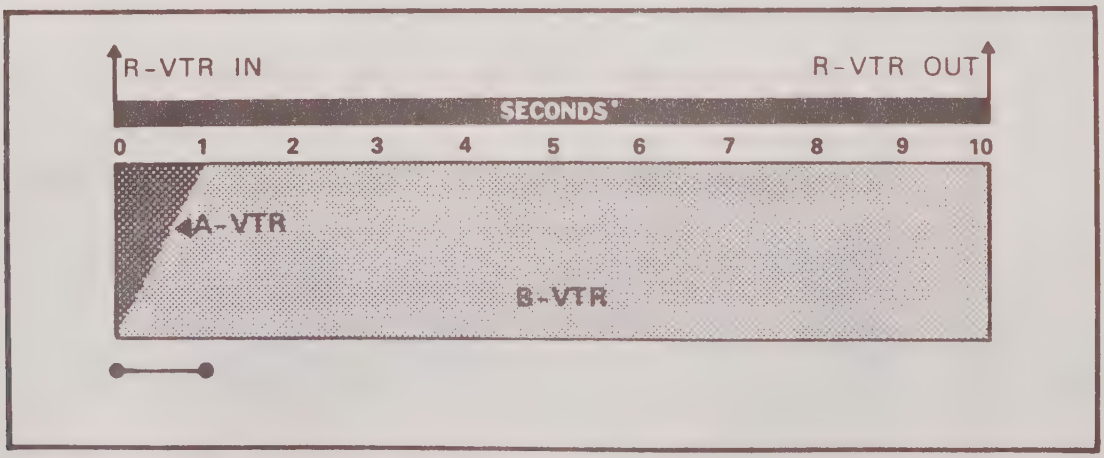
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 30

SPECIAL INFORMATION:

The record duration always takes precedence over the Playback duration, so instead of the edit being 8:00 long, it is 10:00 long.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

DISSOLVE - CASE 3

MENU AREA DISPLAY:

			IN	OUT	DURATION
		R-VTR	01:00:00:00	01:00:10:00	00:00:10:00
DIS					
A TO B	030	A-001	02:00:00:00	02:00:09:00	00:00:09:00
		B-002	03:00:00:00		
		C-003			
EVENT #003		AUX			
		BLACK			

EDL ENTRY:

003	001	B	C		02:00:00:00	02:00:09:00	01:00:00:00	01:00:09:00
003	002	B	D	030	03:00:00:00	03:00:01:00	01:00:09:00	01:00:10:00

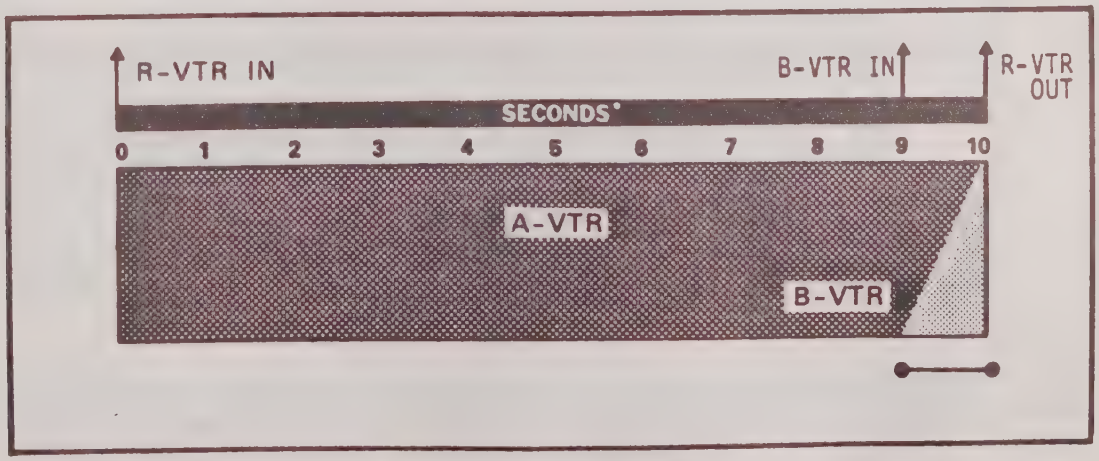
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 30

SPECIAL INFORMATION:

This is a Delayed Dissolve. The From source (A-VTR) has a duration 9:00 long, while the entire edit has a duration of 10:00 as defined by the R-VTR. That means the To source (B-VTR) can remain on for 1:00, which is also the dissolve rate. The edit after this one would probably be a Cut to the B-VTR to extend its scene.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

DISSOLVE - CASE 4

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00	01:00:10:00	00:00:10:00
DIS				
A TO B 030	A-001	02:00:00:00	02:00:08:00	00:00:08:00
	B-002	03:00:00:00		
	C-003			
EVENT #004	AUX			
	BLACK			

EDL ENTRY:

004	001	B	C		02:00:00:00	02:00:08:00	01:00:00:00	01:00:08:00
004	002	B	D	030	03:00:00:00	03:00:02:00	01:00:08:00	01:00:10:00

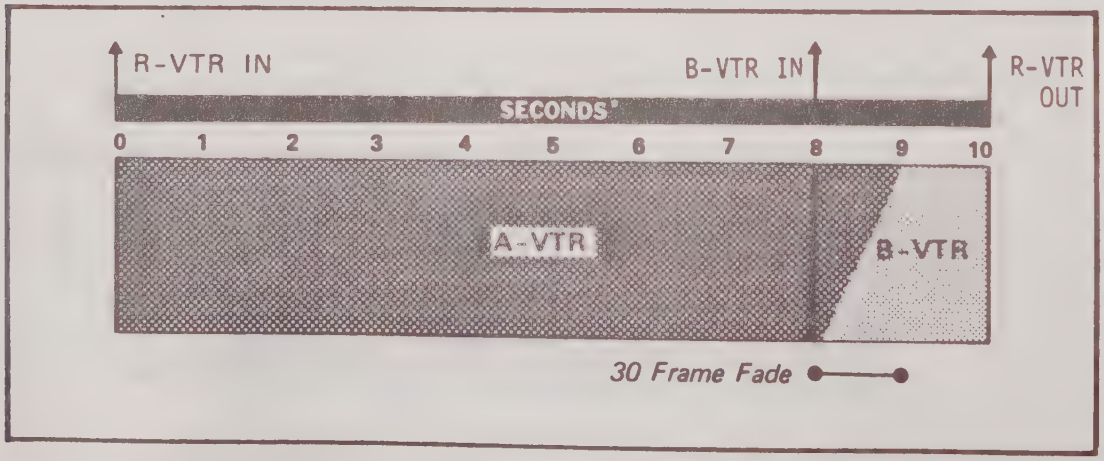
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 30

SPECIAL INFORMATION:

The From source has a duration of 8:00, the total edit duration is 10:00. Therefore, the To source remains on for 2:00. The same effect can be achieved by not entering an out-time on the R-VTR, and giving the To source a duration of 2:00.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

DISSOLVE - CASE 5

MENU AREA DISPLAY:

			IN	OUT	DURATION
		R-VTR	01:00:00:00		
DIS					
A TO B	240	A-001	02:00:00:00		
		B-002	03:00:00:00	03:00:08:00	00:00:08:00
		C-003			
EVENT #006		AUX			
		BLACK			

EDL ENTRY:

006	001	B	C		02:00:00:00	02:00:00:00	01:00:00:00	01:00:00:00
006	002	B	D	240	03:00:00:00	03:00:08:00	01:00:00:00	01:00:08:00

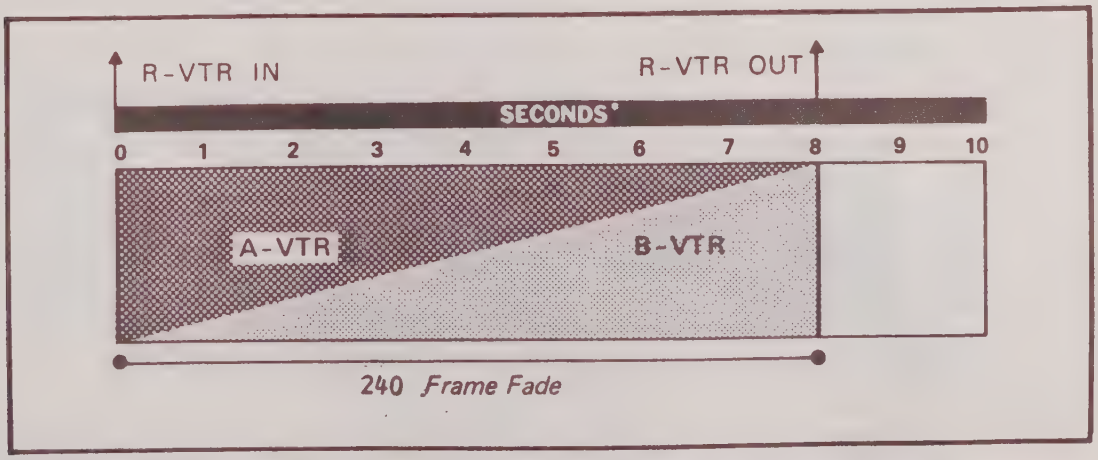
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 240

SPECIAL INFORMATION:

Notice the Dissolve rate (240 frames) and the edit duration (8:00) equal the same amount. Therefore, the entire edit will be the transition from the A-VTR to the B-VTR. (Note : the maximum transition rate is 255 frames).

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

DISSOLVE - CASE 6

MENU AREA DISPLAY:

```
                                    IN          OUT         DURATION
                          R-VTR  01:00:00:00  01:00:10:00  00:00:10:00
DIS
A TO B   240              A-001  02:00:00:00
                          B-002  03:00:00:00
                          C-003
 EVENT #007               AUX
                          BLACK
```

EDL ENTRY:

```
007  001  B    C        02:00:00:00  02:00:00:00  01:00:00:00  01:00:00:00
007  002  B    D   240  03:00:00:00  03:00:10:00  01:00:00:00  01:00:10:00
```

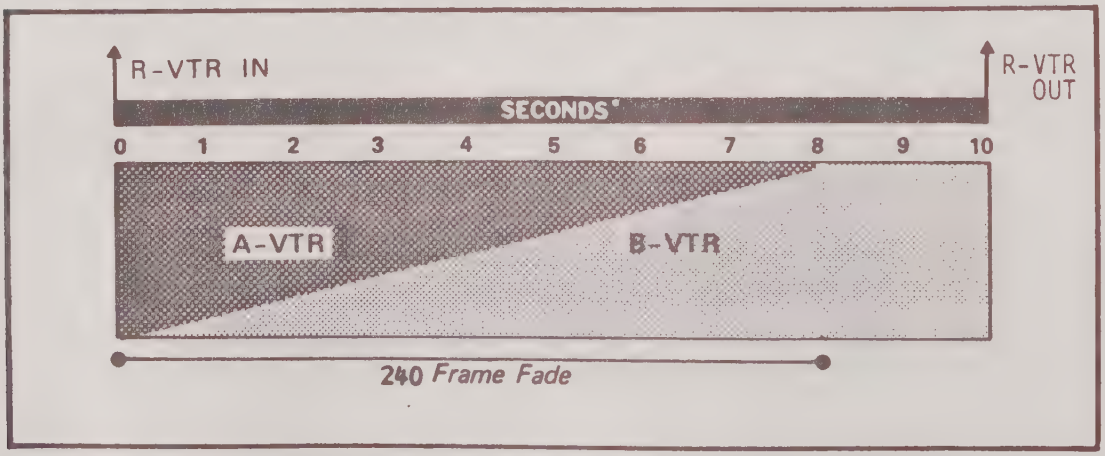
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 240

SPECIAL INFORMATION:

The edit duration is controlled by the R-VTR. The dissolve lasts 8:00 seconds, and the edit remains on the B-VTR (To Source) for 10:00 seconds (R-VTR's duration).

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

DISSOLVE - CASE 7

MENU AREA DISPLAY:

			IN	OUT	DURATION
		R-VTR	01:00:00:00		
DIS					
A TO B	030	A-001	02:00:00:00	02:00:05:00	00:00:05:00
		B-002	03:00:00:00	03:00:05:00	00:00:05:00
		C-003			
EVENT #009		AUX			
		BLACK			

EDL ENTRY:

001	001	B	C		02:00:00:00	02:00:05:00	01:00:00:00	01:00:05:00
001	002	B	D	030	03:00:00:00	03:00:05:00	01:00:05:00	01:00:10:00

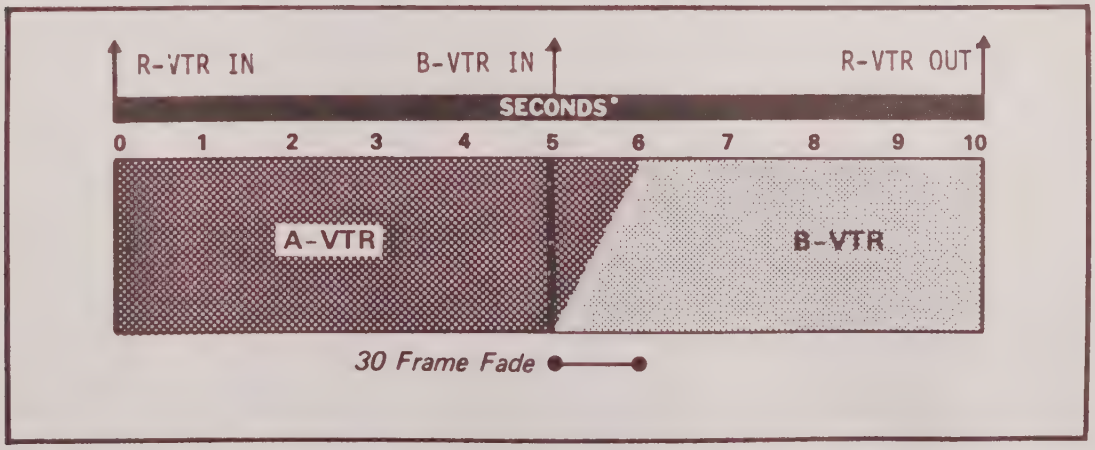
SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 30

SPECIAL INFORMATION:

This is a Delayed Dissolve. Both sources have defined out-times, and the A-VTR's duration is the length of the delay. The same effect could be achieved by entering a 10:00 duration on the R-VTR and no duration on the B-VTR.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

ILLEGAL ENTRY - CASE 1

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00	01:00:08:00	00:00:08:00
DIS				
A TO B 030	A-001	02:00:00:00	02:00:09:00	00:00:09:00
	B-002	03:00:00:00		
	C-003			
EVENT #005	AUX			
	BLACK			

EDL ENTRY:

NONE

SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 30

SPECIAL INFORMATION:

If you tried to record or preview this edit, the edit screen would display: DEFINE OUT POINT. This is because the From source has a duration longer than the duration established for the entire edit.

NO DIAGRAM !

ILLEGAL ENTRY - CASE 2

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00	01:00:05:00	00:00:05:00
DIS				
A TO B 255	A-001	02:00:00:00		
	B-002	03:00:00:00		
	C-003			
EVENT #008	AUX			
	BLACK			

EDL ENTRY:

NONE

SYSTEM MESSAGE AREA DISPLAY:

DISSOLVE FROM- A TO- B
RATE= 255

SPECIAL INFORMATION:

If you tried to record this edit, the edit screen would display: DEFINE OUT POINT. The edit duration is shorter than the Dissolve rate.

NO DIAGRAM !

WIPES

FUNCTION DESCRIPTION

Wipes are handled the same way as dissolves, with one exception -- you must enter a Wipe Code number to indicate the wipe pattern you desire.

The Wipe Code Table on Page 11-25 shows 23 wipe patterns. These are the only ones that have been standardized among video equipment manufacturers. Your switcher may be capable of many more, including rotary wipes. If so, you should receive a table that shows the CMX wipe code numbers that correspond to the wipes available on your type of switcher.

For a normal direction wipe, type in the desired wipe code number between 1 to 23.

For a reverse direction wipe, add 100 to the standard wipe code number. For example, 101 would be a reverse horizontal wipe going from right to left on the monitor.

KEYBOARD INSTRUCTIONS

When you press the WIPE key, the System Message Area displays:

WIPE CODE = W

Type in the desired wipe code number and press ENTER.

The rest of the dialogue is exactly like that used with dissolve transitions. Select the From source, the To source, and type in the desired number of frames for the Rate of the transition.

The completed dialogue displayed in the System Message Area would look something like this:

WIPE CODE= W19
WIPE FROM- B TO- C
RATE= 255

Once you are satisfied with the Wipe information, press ENTER. The Function Area of the Menu will now display:

WIPE-19
B TO C 255

After you enter edit times into the VTRs involved, you may preview or record the edit.

If you wish to change either the Wipe Code number or the rate, press the WIPE key. The System Message Area will display:

WIPE CODE =

There are two types of responses you can make:

- If you want to enter a new Wipe Code number (say 121), type it in and press ENTER. The edit screen will then display:

  WIPE CODE= W 121
  RATE=

  Because you changed the wipe code number, you must also type in the rate. Then press ENTER; and the new information will be displayed in the Function Area.

- If you want to change only the rate (but not the Wipe Code number), press ENTER. The Message Area displays:

  WIPE CODE= W
  RATE=

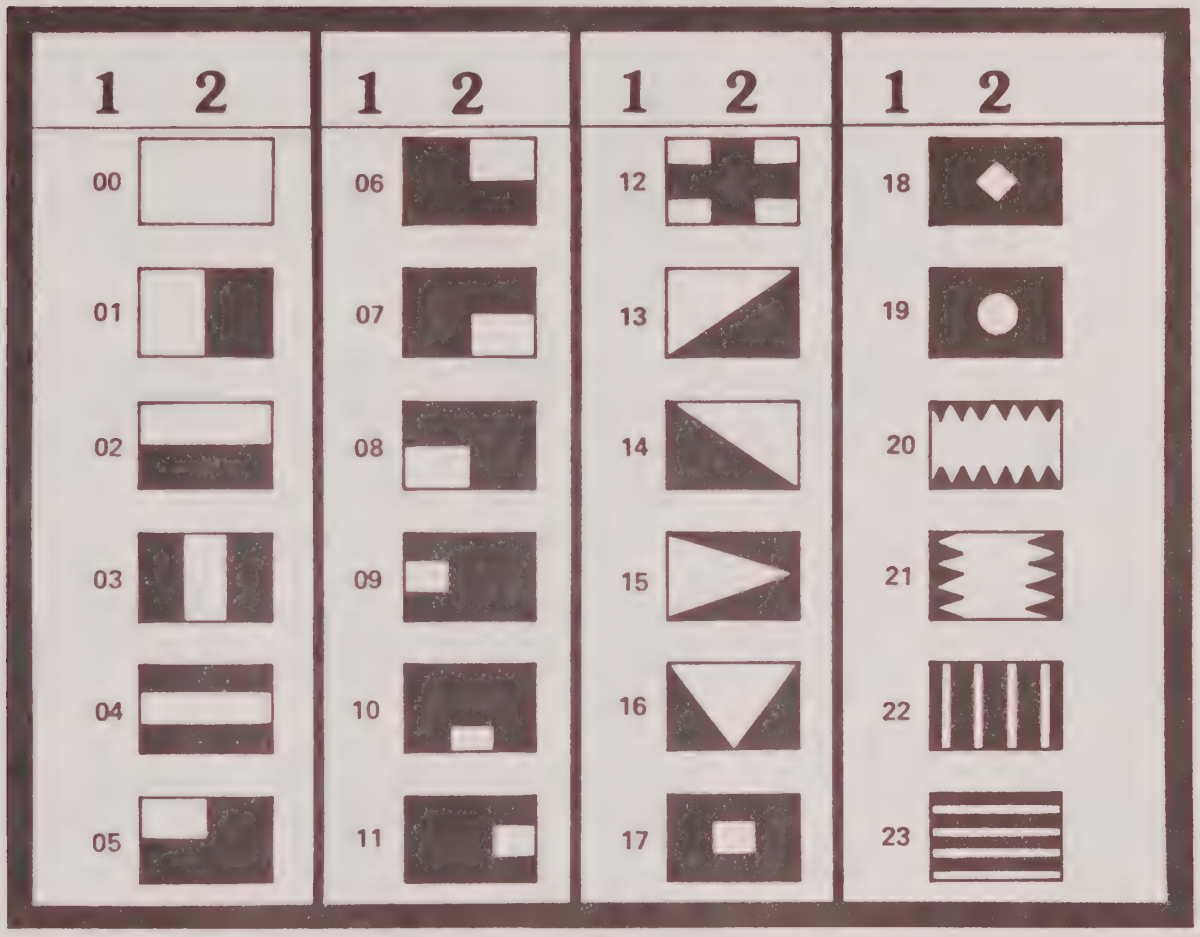
Type in the rate in frames, and ENTER. The new wipe information will be displayed in the Function Area of the Menu.

If you want to change the From and To sources, you must press the CUT key first. Then press the WIPE key and respond to the entire dialogue.

SPECIAL INFORMATION

On the following page, there is a table of Wipe Code Patterns. For examples on how to set up the edit times for a wipe transition, refer to the Dissolve Cases located earlier in this section.

WIPE CODE PATTERN TABLE



1 Wipe Code is for normal direction wipe. Add 100 for reverse direction wipe.

2 Sketch shows effect. Normal direction of change is white replacing black.

Wipe codes from 24 to 85 have not been standardized, since expanded wipes are not available on all switchers. In the basic 23 wipes, if the switcher is not capable of a specific wipe pattern, it will default to Number 1.

KEYS

FUNCTION DESCRIPTION

A key is an electronic means of matting one video signal on top of another such that the background scene does not show through the foreground keyed material. The key information is usually titles, letters, or other artwork that come from a camera title card, character generator, film footage, or videotape.

Many customers design their CMX system so that non-VTR sources can be routed through the switcher and accessed on the 330XL by pressing the AUX Select key. You need to find out how your particular system has been designed.

Prior to recording a key edit, you can set up a color background, border, or drop-shadow effect on the switcher.

In all cases, the audio will follow the background source -- not the foreground keyed material.

This discussion of keys is divided into two main categories: Key and Key Out. The first question in the Key dialogue allows you to select which type you want. Within each category, the following material will be covered:

1. Key dialogue
2. Rules for defining a key edit
3. Illustrated examples of key edits

By using the Key and Key Out functions, it's possible to achieve fourteen types of key edits on the 330XL depending on how you set up the edit times. The chart on the following page shows these fourteen variations.

Because the system gives you the capability to create so many types of key edits, the following

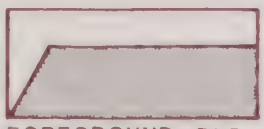
discussions can get a bit involved. But when you sit down at the keyboard, you'll find the actual procedure of setting up a key to be quite simple.

TYPES OF KEY EDITS

KEY (IN):

TOTAL EDIT DURATION=FOREGROUND DURATION+DELAY-FADE RATE

FOREGROUND = EDIT DURATION



FOREGROUND = DUR (w/FADE)

FOREGROUND = EDIT DUR - DELAY

FOREGROUND = FADE RATE = EDIT DUR - DELAY

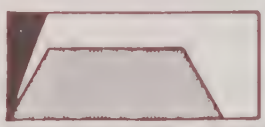
FOREGROUND = EDIT DURATION - FADE RATE

FOREGROUND < EDIT DURATION - FADE RATE

FOREGROUND = EDIT DURATION - (DELAY + FADE RATE)

FOREGROUND = EDIT DURATION - (DELAY + FADE RATE)

FOREGROUND = BACK GROUND DURATION



FOREGROUND - FADE RATE < EDIT DURATION

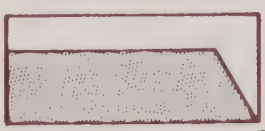
FOREGROUND < EDIT DURATION

FOREGROUND = EDIT DURATION - DELAY

FOREGROUND < EDIT DURATION - DELAY

KEY OUT:

TOTAL EDIT DURATION MUST BE ≥ FOREGROUND DURATION + FADE RATE



FOREGROUND = EDIT DURATION - FADE RATE

FOREGROUND < EDIT DURATION - FADE RATE

FOREGROUND = 0 DURATION (- FADE RATE)

FOREGROUND = BACKGROUND DURATION - FADE RATE

KEY DIALOGUE

KEYBOARD INSTRUCTIONS

When you first press the KEY button, the System Message Area displays:

KEY?

Give an affirmative response to this question by pressing the ENTER or Y key. (If you respond by pressing N, you will get the Key Out dialogue, which will be discussed later.)

Once you give an affirmative response to the question, the edit screen will display:

KEY?
BACKGROUND=

Press the Select key for the source that will provide the background for the keyed materials. In this case we will enter the A-VTR Select key, and the edit screen will then display:

KEY?
BACKGROUND= A FOREGROUND =

Press the Select key that provides the material for the keyed information. In this case we press the AUX key, and the edit screen displays:

KEY?
BACKGROUND= A FOREGROUND= X
DELAY=

Depending on the effect you want to achieve, there are two types of responses you can make to the DELAY question.

- **NO DELAY DESIRED**
  Press ENTER if you do not want to delay the start of the keyed material from the beginning of the background in-time. In other words, you want the background and foreground to both come in at the beginning of the edit point.

- **DELAY DESIRED**
  If you want your foreground keyed material to come in later than the background source, type in the duration of the desired delay and ENTER. The delay duration can be entered either in frames (90 frames) or as a time value with a colon (3:00).

After you respond to the DELAY question (either by pressing ENTER or by typing in a delay duration value and ENTER), the edit screen will display:

```
KEY
BACKGROUND= A   FOREGROUND=  X
DELAY=  3:00  FADE BLACK OFF?
```

This message allows you to choose whether you want the switcher's downstream "fade-from-black" hardware turned off or on.

- If you have entered a delay duration, then you must anwer Y or ENTER to the FADE BLACK OFF message. FADE BLACK OFF means the background and foreground will NOT fade up from Black together. In other words, the background will be a direct cut at the start of the edit, with the keyed material brought in either as a direct cut

or faded in at a specified rate, depending on your response to the RATE question.

- A NO response to the FADE BLACK OFF? question would toggle to the opposite message of FADE BLACK ON? This means you want both the background and foreground to fade up from Black together at the same time. You can't ask for the FADE BLACK ON if you have entered a Delay time for the foreground material. The system obviously can't fade both sources up from Black at the same time if you have requested the keyed material to be delayed.

Once you decide between Fade Black Off or On , press ENTER, and edit screen will display:

```
KEY?
BACKGROUND= A  FOREGROUND= X
DELAY= 3:00    FADE BLACK OFF?
RATE=
```

The Rate question refers to the number of frames you want the fade up to occur. This can be any amount from Ø to 255 frames. If you enter a zero duration, the material will "pop on". If the edit is set to also fade out the key, the fade-out rate will be the same as the fade-up rate.

- In the Fade Black Off mode, the rate will be the number of frames at which the foreground keyed material is faded in over the background.

- In the Fade Black On mode, the rate will be the number of frames at which both the background and foreground will fade up from black.

NOTE: If you want both the background and foreground to pop on together, use the Key Out dialogue, which is described later. Some switchers will delay the foreground one frame later than the background if you enter a zero duration in the Key dialogue. Check your system to make sure.

Once you answer the DURATION question by typing in the desired number of frames, the System Message Area will look like this:

```
KEY?
BACKGROUND= A  FOREGROUND= X
DELAY= 3:00    FADE BLACK OFF?
RATE= 30
```

When you press ENTER, this information will be entered into the computer's memory and displayed in the Function Area of the edit screen in this way:

```
KEY
X OVR A 030
00:00:03:00
```

This means you want a key edit with the background source being a direct cut at the beginning of the edit. Three seconds later, the foreground keyed material will fade in at the rate of 30 frames.

NOTE: If you want the background to fade up from black by itself and the key to fade in later, you have to make two edits. First, perform a dissolve from Black to the background source. Then make a match-frame edit using the Key dialogue to bring in the foreground material.

RULES FOR DEFINING A KEY EDIT

- Establish in-times for all sources.
- Establish an out-time on either the R-VTR or background source. This will determine the duration of the entire edit.
- If an out-time is not established in the foreground source, the keyed material will remain on for the entire duration of the edit.
- If the foreground source is to fade out before the end of the edit, it must have a duration less than the entire edit by at least the amount of the fade-in rate.
- In a delayed key, the foreground must have a duration less than the duration of the entire edit by at least the sum of the delay duration and fade-in rate.

These rules for entering times during a key edit are illustrated in the following examples. Depending on how you respond to the Key dialogue and how you enter the in and out-times, you can achieve nine types of Key edits. The examples also show how each edit is entered into the Edit Decision List.

KEY IN - CASE 1

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00		
KEY				
B OVR A 030	A-001	02:00:00:00	2:00:10:00	00:00:10:00
	B-002	03:00:00:00		
	C-003			
EVENT #015	AUX			
	BLACK			

EDL ENTRY:

015	001	B	K B		02:00:00:00	02:00:10:00	01:00:00:00	01:00:10:00
015	002	B	K	030	03:00:00:00	03:00:00:00	01:00:00:00	01:00:00:00

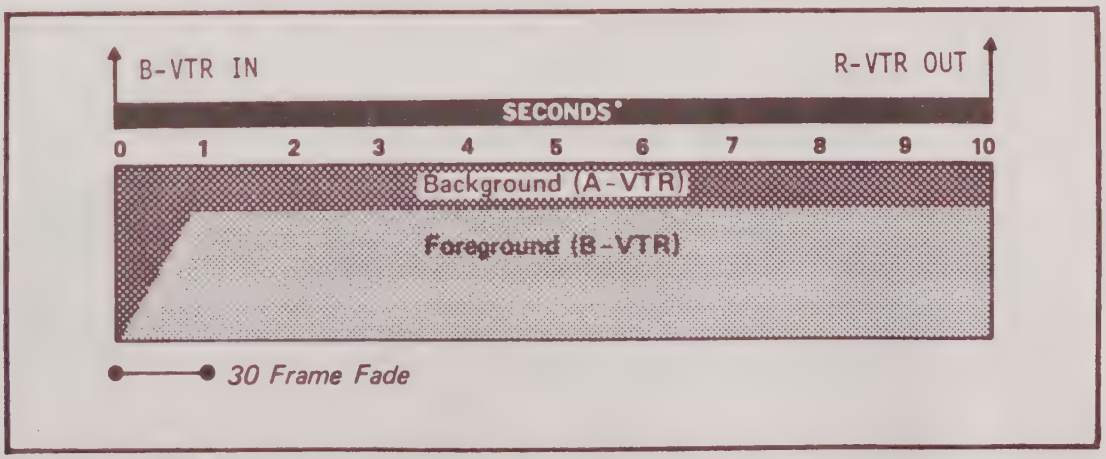
SYSTEM MESSAGE AREA DISPLAY:

KEY?
BACKGROUND= A FOREGROUND= B
DELAY= FADE BLACK OFF?
RATE= 30

SPECIAL INFORMATION:

In the EDL entry, two new characters are introduced: K and B. The K indicates this is a key edit, while the B to its right indicates the first line is the background source. Notice on the second line, the foreground source has the same in and out-time. This indicates the foreground will remain on for the entire duration of the edit. In the Menu Area, the Foreground has no defined out-time.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY IN - CASE 2

MENU AREA DISPLAY:

```
                                IN              OUT         DURATION
                        R-VTR   01:00:00:00     01:00:10:00 00:00:10:00
KEY
X OVR B   030           A-001
                        B-002   02:00:00:00
                        C-003
EVENT #016              AUX     00:00:00:00     00:00:09:00 00:00:09:00
                        BLACK
```

EDL ENTRY:

```
016  002  B     K B      02:00:00:00  02:00:10:00  01:00:00:00  01:00:10:00
016  AX   B     K   030  00:00:00:00  00:00:09:00  01:00:00:00  01:00:09:00
```

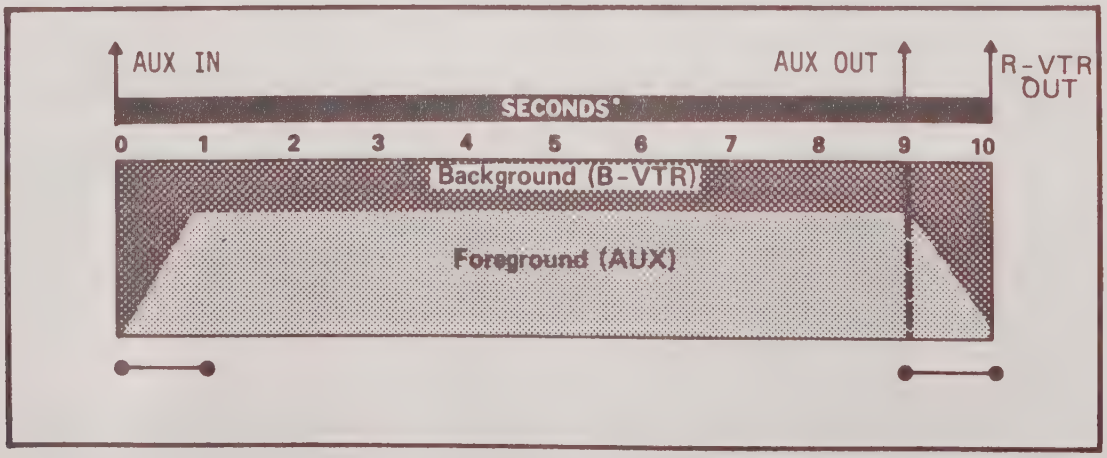
SYSTEM MESSAGE AREA DISPLAY:

```
KEY?
BACKGROUND= B  FOREGROUND= X
DELAY=           FADE BLACK OFF?
RATE=  30
```

SPECIAL INFORMATION:

In the Menu Area, the duration for the entire edit is defined by the R-VTR, but it could also be defined by the B-VTR background source. In order for the AUX foreground source to fade-out at the end of the edit, it must have a duration that's less than the entire edit by the amount of the fade-in rate. The reason is because the out-going fade rate is not reflected in the foreground duration. If you want to know the entire time the foreground source is on, add its defined duration (9:00) plus the fade-out rate (30 frames) to get the total amount (10:00).

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY IN - CASE 3

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00		
KEY				
B OVR A 030	A-001	02:00:00:00	02:00:10:00	00:00:10:00
	B-002	03:00:00:00	03:00:05:00	00:00:05:00
	C-003			
EVENT #017	AUX			
	BLACK			

EDL ENTRY:

017	001	B	K	B	02:00:00:00	02:00:10:00	01:00:00:00	01:00:10:00
017	002	B	K	030	03:00:00:00	03:00:05:00	01:00:00:00	01:00:05:00

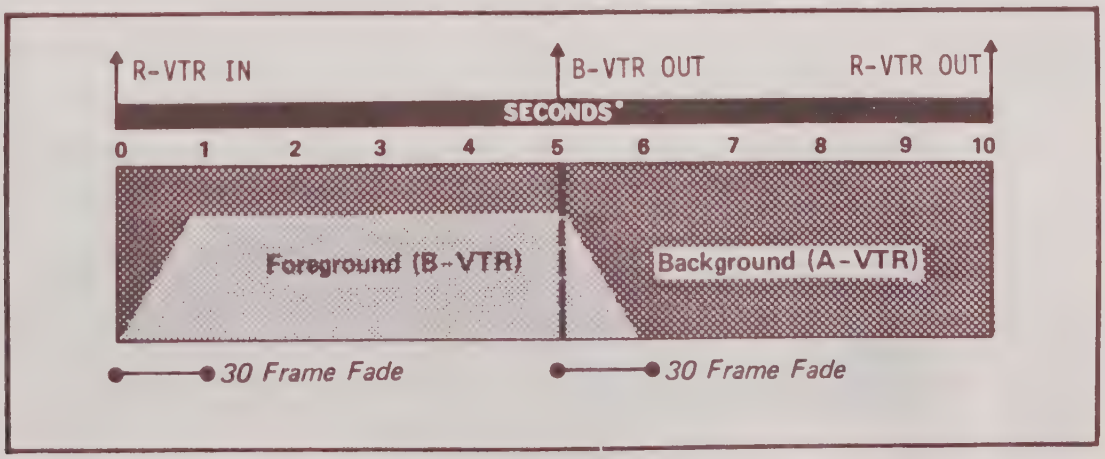
SYSTEM MESSAGE AREA DISPLAY:

KEY?
BACKGROUND= A FOREGROUND= B
DELAY= FADE BLACK OFF?
RATE= 030

SPECIAL INFORMATION:

This key edit has the foreground fading out several seconds before the background source ends. This is because a duration has been entered in the foreground source that is less than the duration of the entire edit.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY IN - CASE 4

MENU AREA DISPLAY:

```
                                IN              OUT         DURATION
                          R-VTR 01:00:00:00
KEY
B OVR A  030    A-001     02:00:00:00   02:00:10:00   00:00:10:00
00:00:04:00     B-002     03:00:00:00
                C-003
 EVENT #018     AUX
                BLACK
```

EDL ENTRY:

```
018  001  B    C        02:00:00:00  02:00:04:00  01:00:00:00  01:00:04:00
018  001  B    K  B     02:00:04:00  02:00:10:00  01:00:04:00  01:00:10:00
018  002  B    K   030  03:00:00:00  03:00:00:00  01:00:04:00  01:00:04:00
```

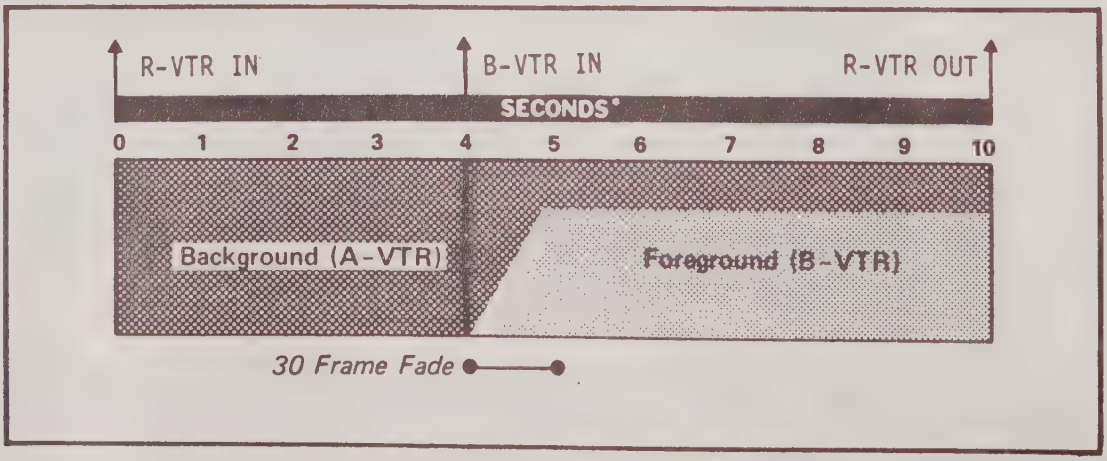
SYSTEM MESSAGE AREA DISPLAY:

```
KEY
BACKGROUND= A     FOREGROUND= B
DELAY= 4:00       FADE BLACK OFF
RATE= 30
```

SPECIAL INFORMATION:

This is a key with the foreground source delayed 4:00. The EDL entry is three lines, with the first line showing a cut to the background source for 4:00, which is the delay time before the foreground fades up. Because the foreground has not been given an out-time in the Menu Area, it will remain on until the end of the edit. This is indicated in the last line of the EDL entry, with the foreground source having the same in-time and out-time of 3:00:00:00.

DIAGRAM:



KEY IN - CASE 5

MENU AREA DISPLAY:

```
                                    IN              OUT         DURATION
                          R-VTR     01:00:00:00
KEY
B OVR A   030   A-001     02:00:00:00   02:00:10:00   00:00:10:00
00:00:02:00     B-002     03:00:00:00   03:00:07:00   00:00:07:00
                C-003
 EVENT #019     AUX
                BLACK
```

EDL ENTRY:

```
019  001  B    C          02:00:00:00   02:00:02:00   01:00:00:00   01:00:02:00
019  001  B    K  B       02:00:02:00   02:00:10:00   01:00:02:00   01:00:10:00
019  002  B    K    030   03:00:00:00   03:00:07:00   01:00:02:00   01:00:09:00
```

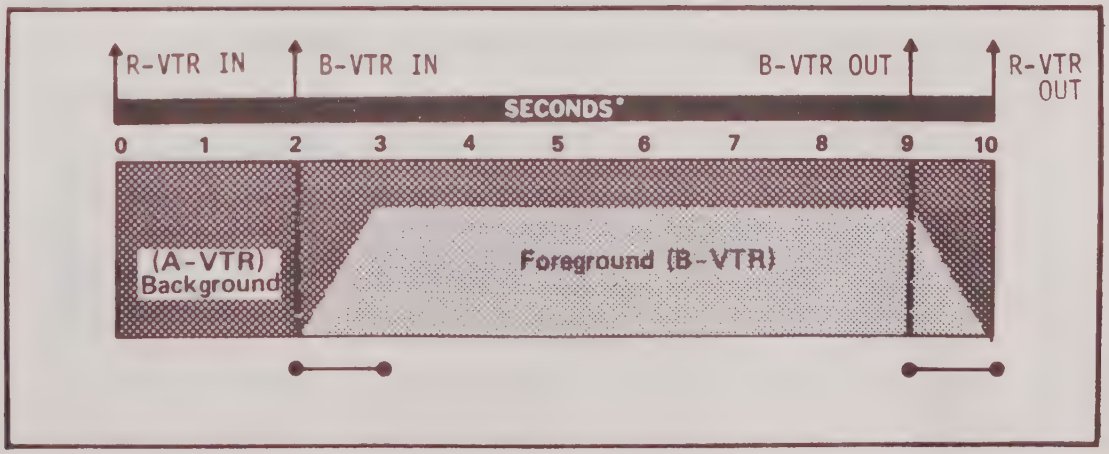
SYSTEM MESSAGE AREA DISPLAY:

```
KEY?
BACKGROUND= A     FOREGROUND= B
DELAY= 2:00       FADE BLACK OFF
RATE= 30
```

SPECIAL INFORMATION:

This key edit shows the foreground fading in 2:00 after the background source starts, and fading out at the out-edit point. This occurred because the foreground was given an out-time. Notice if you add the foreground duration (7:00), the delay duration (2:00), and the fade-out duration (1:00), the total is 10:00. If the total of these three amounts equal the duration of the entire edit (which in this case is 10:00 as defined by the background source), then the foreground source will finish fading out at the out-edit point.

DIAGRAM:



KEY IN - CASE 6

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00		
KEY				
B OVR A 030	A-001	02:00:00:00	02:00:10:00	00:00:10:00
00:00:02:00	B-002	03:00:00:00	03:00:05:00	00:00:05:00
	C-003			
EVENT #020	AUX			
	BLACK			

EDL ENTRY:

020	001	B	C		02:00:00:00	02:00:02:00	01:00:00:00	01:00:02:00
020	001	B	K	B	02:00:02:00	02:00:10:00	01:00:02:00	01:00:10:00
020	002	B	K	030	03:00:00:00	03:00:05:00	01:00:02:00	01:00:07:00

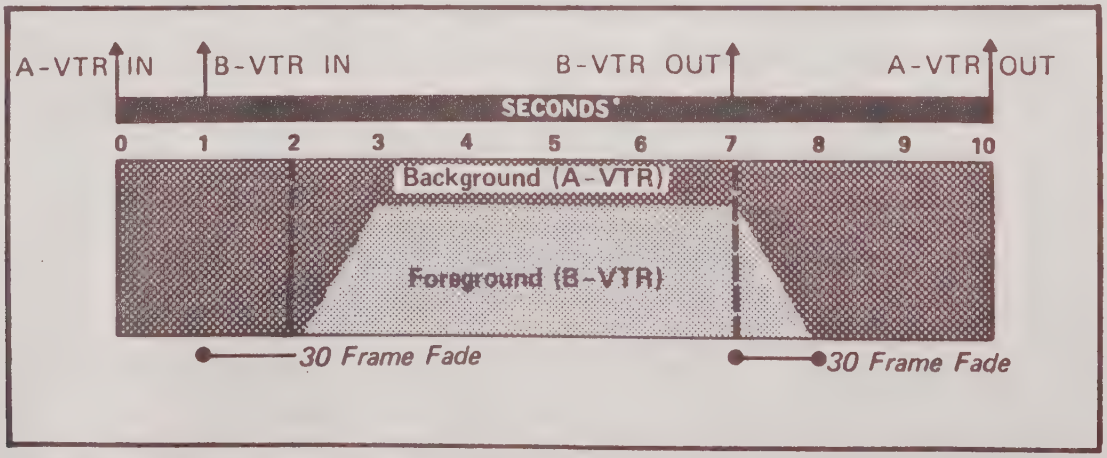
SYSTEM MESSAGE AREA DISPLAY:

KEY?
BACKGROUND= A FOREGROUND= B
DELAY= 2:00 FADE BLACK OFF?
RATE= 30

SPECIAL INFORMATION:

This key edit has the foreground fading in and out in the middle of the edit. The foreground was delayed by 2:00 from the start of the edit. Because the foreground has a 5:00 duration, it will begin to fade out at 7:00 into the edit. Remember, the EDL does not reflect the out-going fade rate. Although the foreground has an R-VTR out-time of 1:00:07:00, it won't be completely faded out until 30 frames later at 1:00:08:00.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY IN - CASE 7

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00		
KEY				
X OVR A 060	A-001	02:00:00:00	02:00:10:00	00:00:10:00
00:00:08:00	B-002			
	C-003			
EVENT #022	AUX			
	BLACK			

EDL ENTRY:

022	001	B	C		02:00:00:00	02:00:08:00	01:00:00:00	01:00:08:00
022	001	B	K	B	02:00:08:00	02:00:10:00	01:00:08:00	01:00:10:00
022	AX	B	K	060	00:00:00:00	00:00:00:00	01:00:08:00	01:00:08:00

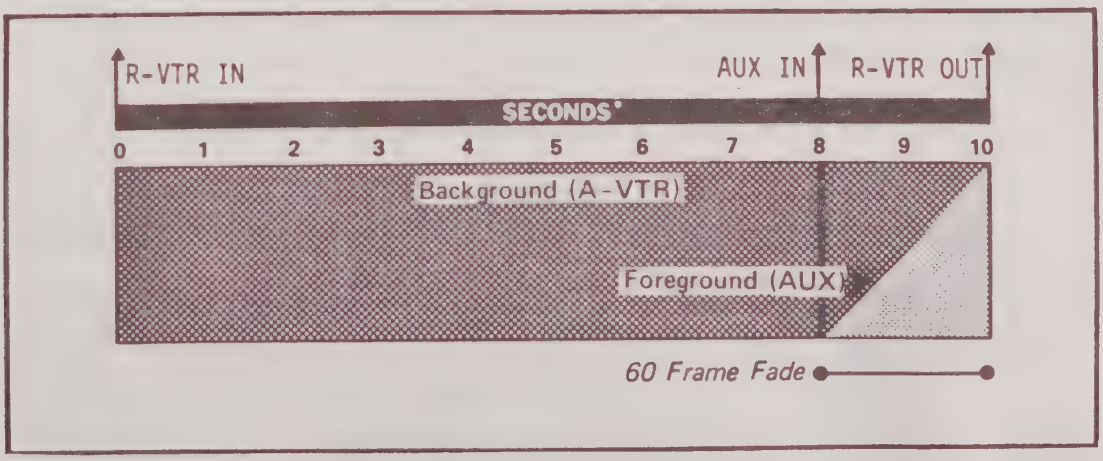
SYSTEM MESSAGE AREA DISPLAY:

KEY?
BACKGROUND= A FOREGROUND= X
DELAY= 8:00 FADE BLACK OFF?
RATE= 60

SPECIAL INFORMATION:

This edit allows the foreground source to be faded up at the very end of the edit. Notice no in or out-time was needed on AUX. The duration of the edit was defined by the A-VTR, and the foreground source was delayed by 8:00.

DIAGRAM:



KEY IN - CASE 8

MENU AREA DISPLAY:

```
                                IN              OUT         DURATION
                        R-VTR   01:00:00:00
KEY (F)
B OVR A  030            A-001   02:00:00:00     02:00:10:00 00:00:10:00
                        B-002   03:00:00:00
                        C-003
 EVENT #023             AUX
                        BLACK
```

EDL ENTRY:

```
023  001  B     K  B (F)  02:00:00:00  02:00:10:00  01:00:00:00  01:00:10:00
023  002  B     K    030  03:00:00:00  03:00:00:00  01:00:00:00  01:00:00:00
```

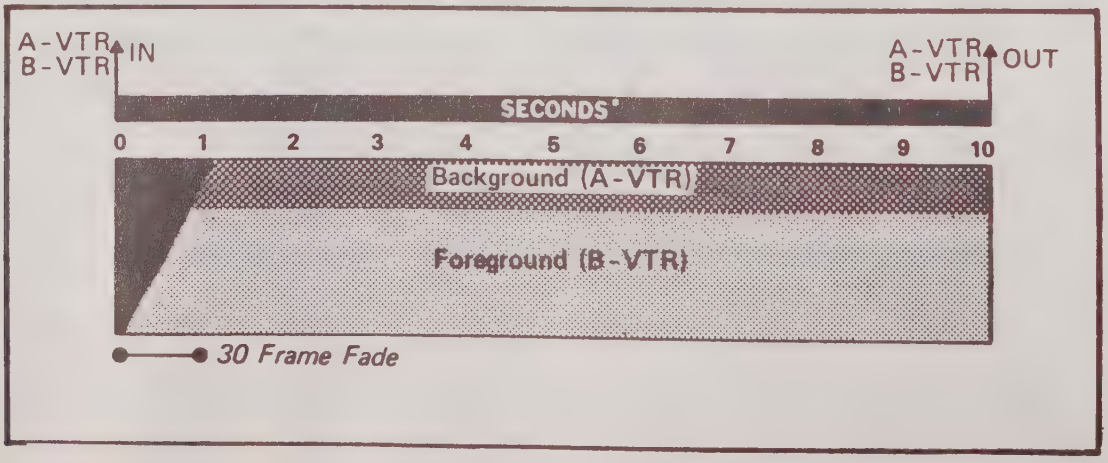
SYSTEM MESSAGE AREA DISPLAY:

```
KEY?
BACKGROUND= A     FOREGROUND= B
DELAY=            FADE BLACK ON?
RATE= 30
```

SPECIAL INFORMATION:

Because FADE BLACK ON was requested, both the foreground and background fade up together at the in-edit point. The foreground source will remain on throughout the edit because it was not given an out-time in the Menu Area. In the EDL entry, the foreground's in and out-times are equal, indicating it will remain on for the duration of the edit.

DIAGRAM:



KEY IN - CASE 9

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00	01:00:10:00	00:00:10:00
KEY (F)				
B OVR A 030	A-001	02:00:00:00		
	B-002	03:00:00:00	03:00:05:00	00:00:05:00
	C-003			
EVENT #024	AUX			
	BLACK			

EDL ENTRY:

024	001	B	K	B	(F)	02:00:00:00	02:00:10:00	01:00:00:00	01:00:10:00
024	002	B	K		030	03:00:00:00	03:00:05:00	01:00:00:00	01:00:05:00

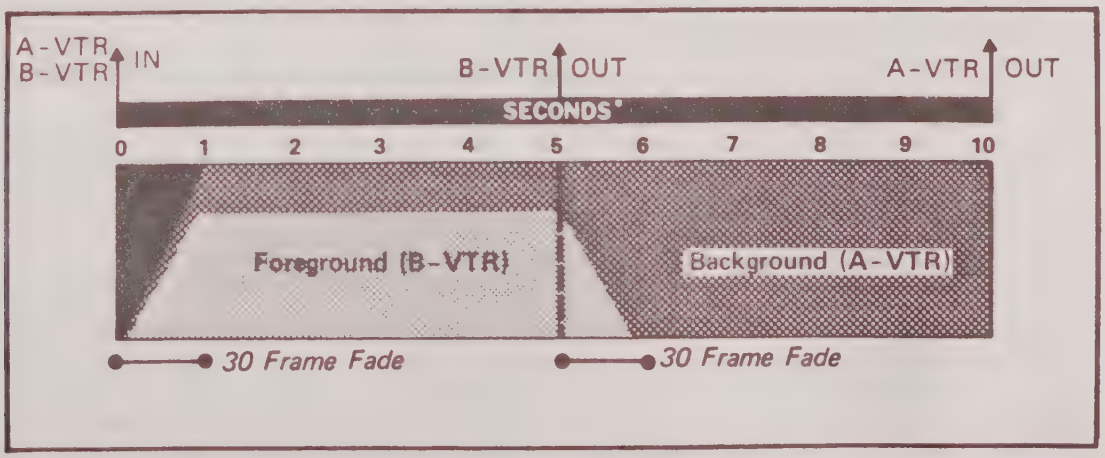
SYSTEM MESSAGE AREA DISPLAY:

KEY?
BACKGROUND= A FOREGROUND= B
DELAY= FADE BLACK ON?
RATE= 30

SPECIAL INFORMATION:

Both sources fade up from Black at the beginning of the edit, but the foreground source fades out 5:00 later because it was given a duration shorter than the duration of the entire edit.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY OUT: DIALOGUE

There are many similarities between the Key and Key Out dialogues. When you first press the KEY button, the System Message Area displays:

KEYBOARD INSTRUCTIONS

KEY?

If you press N; the message will toggle to:

KEY OUT?

Use the Key Out dialogue with edits that begin with the foreground material already keyed over the background source.

The dialogue is similar to Key, but the system will not ask you the DELAY question because a Key Out assumes both sources are already on at the beginning of the edit.

If you have requested a Key Out and entered the background and foreground sources, the next message on the edit screen is:

KEY OUT?
BACKGROUND= A FOREGROUND= AUX
FADE BLACK OFF?

(Notice the screen did not prompt you for a DELAY.) The FADE BLACK OFF message allows you to decide if you want the switcher's downstream fade-to-black hardware turned off or on.

- A Y or ENTER response to the FADE BLACK OFF? question means the background will end with a direct cut at the out-edit point, while the foreground keyed material can end either as a direct cut or fade out, depending on how you respond to the following DURATION question.

- A NO response to the FADE BLACK OFF? question will toggle to the opposite question, which is FADE BLACK ON? This means both the background and foreground will fade to black together at the same time at the end of the edit point.

Once you decide between Fade Black On or Fade Black Off, press ENTER, and the edit screen will display:

```
KEY OUT?
BACKGROUND= A  FOREGROUND= AUX
                FADE BLACK ON?
   RATE=
```

The RATE question refers to the number of frames you want the fade out to occur, which can be any amount from Ø to 255 frames.

- In the Fade Black Off mode, the Rate will determine the number of frames at which the foreground keyed material will fade out, with the background source ending as a direct cut at the out-edit point.

- In the Fade Black On mode, the Rate will determine the number of frames at which both the fore-ground and background will fade to black at the end of the edit.

Once you answer the RATE question by typing in the desired number of frames, the System Message Area will look like this:

```
KEY OUT
BACKGROUND= A  FOREGROUND= X
                FADE BLACK ON
   RATE=  45
```

When you press ENTER, this information will be

entered in the computer's memory and displayed in the Function Area in this way:

KEY OUT (F)
X OVR A 045

This means both the background and foreground are on at the beginning of the edit. At the end of the edit, both sources will fade to black (F) at the rate of 45 frames.

KEY OUT:
RULES FOR DEFINING AN EDIT

- o Establish in-times for all sources.

- o Open-ended edits are possible.

- o Establishing an out-time on either the R-VTR or background source will determine the duration of the entire edit.

- o When out-times are established on the foreground source, follow these rules:

  1. In the Fade Black Off mode, the foreground duration must be less than the duration of the entire edit by at least the fade-out rate.

  2. In the Fade Black On mode, the foreground duration must be less than the duration of the entire edit by exactly the amount of the fade-out rate.

These rules are further illustrated in the examples on the following pages.

KEY OUT - CASE 1

MENU AREA DISPLAY:

			IN	OUT	DURATION
		R-VTR	01:00:00:00		
KEY OUT					
B OVR A	000	A-001	02:00:00:00	02:00:10:00	00:00:10:00
		B-002	03:00:00:00	03:00:10:00	00:00:10:00
		C-003			
EVENT #025		AUX			
		BLACK			

EDL ENTRY:

025	001	B	K	B		02:00:00:00	02:00:10:00	01:00:00:00	01:00:10:00
025	002	B	K	O	000	03:00:00:00	03:00:10:00	01:00:00:00	01:00:10:00

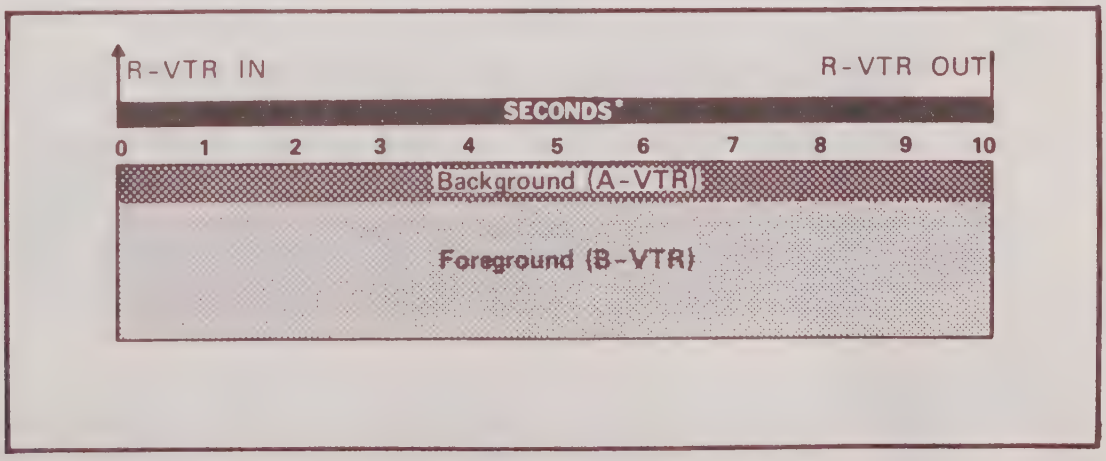
SYSTEM MESSAGE AREA DISPLAY:

KEY OUT?
BACKGROUND= A FOREGROUND= B
FADE BLACK OFF?
RATE= 0

SPECIAL INFORMATION:

Both sources are on for the entire duration of the edit. Notice that both sources have a defined out-time.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY OUT - CASE 2

MENU AREA DISPLAY:

```
                                    IN            OUT           DURATION
                          R-VTR   01:00:00:00  01:00:10:00  00:00:10:00
KEY OUT
B OVR A   030             A-001   02:00:00:00
                          B-002   03:00:00:00  03:00:09:00  00:00:09:00
                          C-003
 EVENT #026               AUX
                          BLACK
```

EDL ENTRY:

```
026  001  B     K  B      02:00:00:00  02:00:10:00  01:00:00:00  01:00:10:00
026  002  B     K  O 030  03:00:00:00  03:00:09:00  01:00:00:00  01:00:09:00
```

SYSTEM MESSAGE AREA DISPLAY:

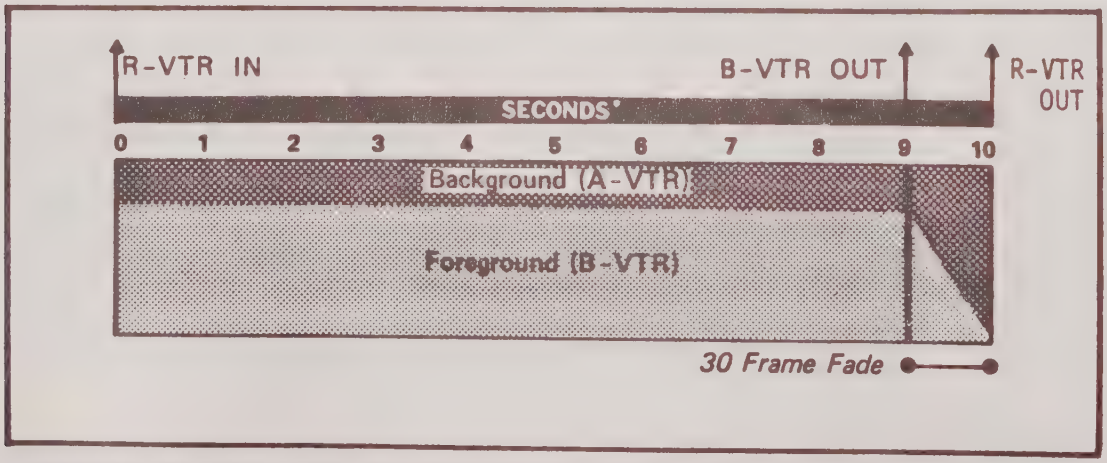
```
KEY OUT?
BACKGROUND= A     FOREGROUND= B
                  FADE BLACK OFF?

RATE= 30
```

SPECIAL INFORMATION:

The foreground source has a duration less than that of the entire edit. Therefore, it will fade out at the end of the edit point.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY OUT - CASE 3

MENU AREA DISPLAY:

```
                                  IN              OUT          DURATION
                          R-VTR   01:00:00:00
KEY OUT
B OVR A   030             A-001   02:00:00:00   02:00:10:00   00:00:10:00
                          B-002   03:00:00:00   03:00:05:00   00:00:05:00
                          C-003
EVENT #027                AUX
                          BLACK
```

EDL ENTRY:

```
027  001  B     K  B        02:00:00:00   02:00:10:00   01:00:00:00   01:00:10:00
027  002  B     K  O  030   03:00:00:00   03:00:05:00   01:00:00:00   01:00:05:00
```

SYSTEM MESSAGE AREA DISPLAY:

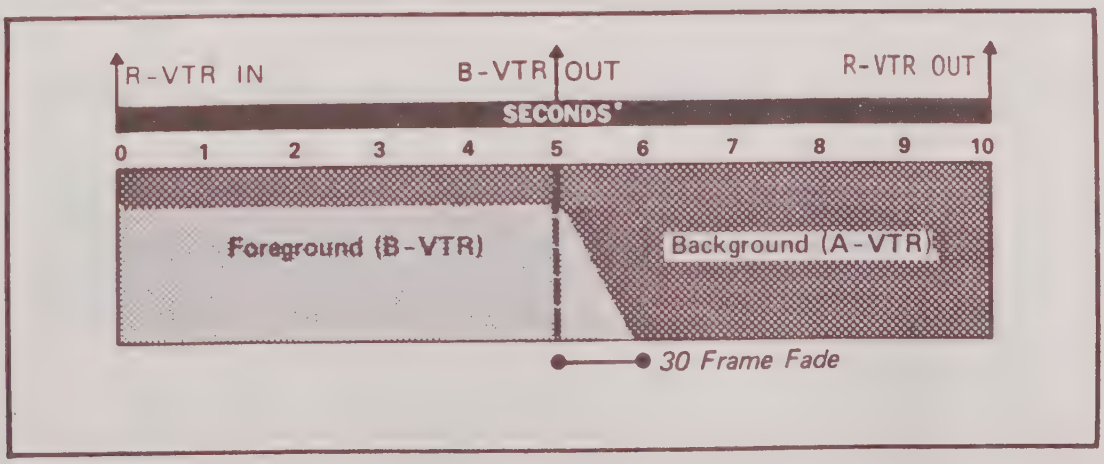
```
KEY OUT?
BACKGROUND= A     FOREGROUND= B
                  FADE BLACK OFF?

RATE= 30
```

SPECIAL INFORMATION:

The foreground source has a duration that is 5:00 less than the total duration of the edit. Therefore, it will start to fade out at 5:00 into the edit. Remember, the out-going fade is not reflected in the EDL. To find out how long the foreground source appears, including its fade out, add its duration (5:00) and the fade rate (1:00) for a total of 6:00.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY OUT - CASE 4

MENU AREA DISPLAY:

```
                                   IN          OUT         DURATION
                          R-VTR  01:00:00:00  01:00:10:00  01:00:10:00  00:00:10:00
KEY OUT
B OVR A   030             A-001  02:00:00:00
                          B-002  03:00:00:00
                          C-003
EVENT #028                AUX
                          BLACK
```

EDL ENTRY:

```
028  001  B     K  B      02:00:00:00  02:00:10:00  01:00:00:00  01:00:10:00
028  002  B     K  O 030  03:00:00:00  03:00:00:00  01:00:00:00  01:00:00:00
```

SYSTEM MESSAGE AREA DISPLAY:

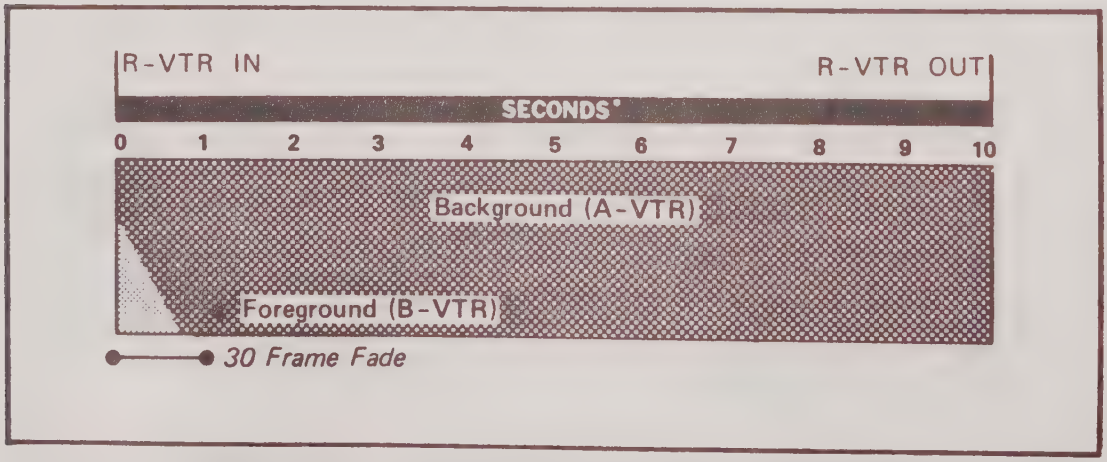
```
KEY OUT?
BACKGROUND= A     FOREGROUND= B
                  FADE BLACK OFF?

RATE= 30
```

SPECIAL INFORMATION:

The entire duration of the edit is established by the R-VTR. Notice there is no out-time established on the foreground source. In a Key Out edit, when there is no out-time for the foreground source, it will begin to fade out immediately at the start of the edit.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.

KEY OUT - CASE 5

MENU AREA DISPLAY:

		IN	OUT	DURATION
	R-VTR	01:00:00:00		
KEY OUT (F)				
B OVR A 030	A-001	02:00:00:00	02:00:10:00	00:00:10:00
	B-002	03:00:00:00	03:00:09:00	00:00:09:00
	C-003			
EVENT #029	AUX			
	BLACK			

EDL ENTRY:

029	001	B	K	B (F)	02:00:00:00	02:00:10:00	01:00:00:00	01:00:10:00
029	002	B	K	O 030	03:00:00:00	03:00:09:00	01:00:00:00	01:00:09:00

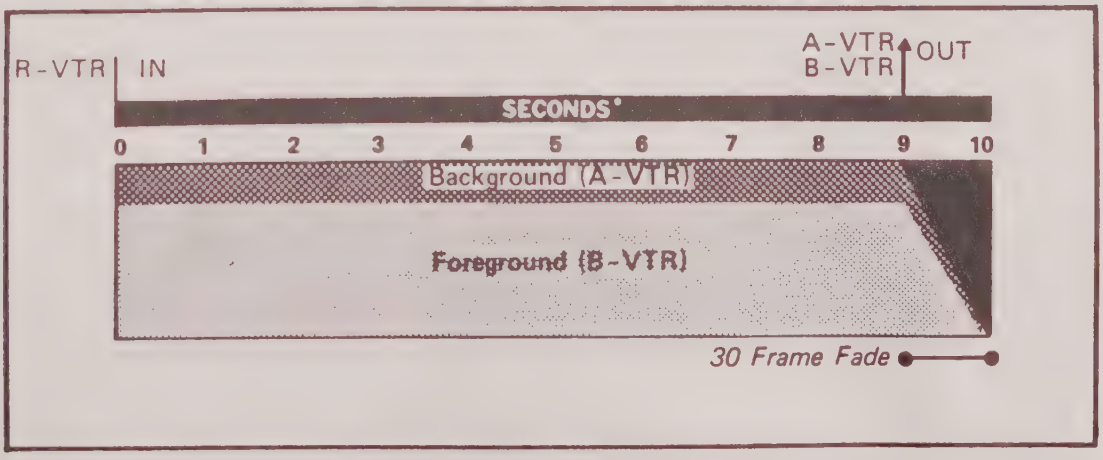
SYSTEM MESSAGE AREA DISPLAY:

KEY OUT?
BACKGROUND= A FOREGROUND= B
FADE BLACK ON?
RATE= 30

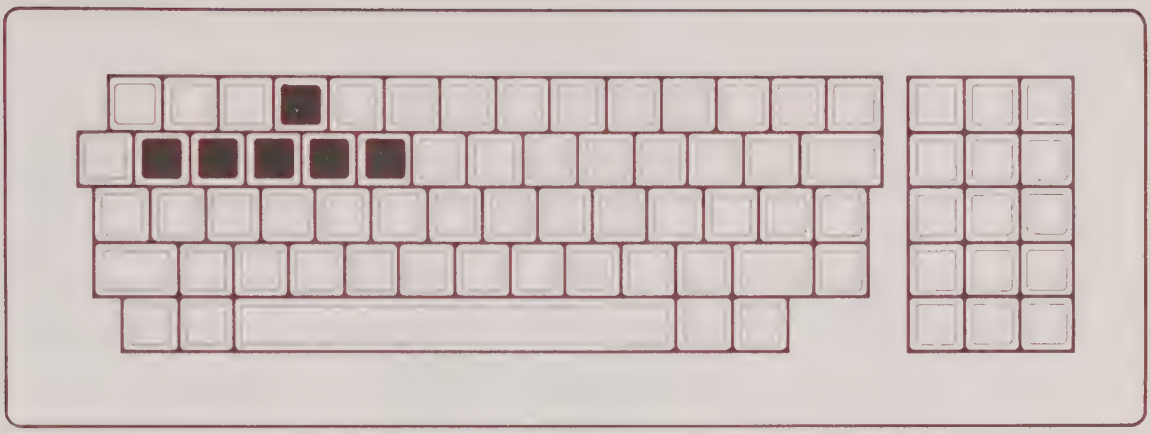
SPECIAL INFORMATION:

This is a Key Out edit with Fade Black On. Both sources fade to black at the same time. Notice the foreground source has a duration (9:00) that is less than the edit duration (10:00) by the amount of the fade rate (1:00). The point at which the fade to black happens is determined by foreground duration i.e., if B-VTR's duration were shortened to 1 second, the fade to black would happen after 1 second, R-VTR would record black for the rest of the edit duration.

DIAGRAM:



*R-VTR, A-VTR and B-VTR time in seconds; but each may have different time codes.



PREVIEW/RECORD/AUTO-ASSEMBLE

SECTION 12 OVERVIEW

The keys in this section allow you to:

1. Preview an edit in a variety of ways.
2. Record a selected edit onto the Master videotape, enter it into the Edit Decision List, and replay the finished results.
3. Instruct the system to automatically record (auto-assemble) a single event or an entire edit list.

SPECIAL INFORMATION

CUE/SYN/LOK

The system goes into three distinct modes when you preview, record, or auto-assemble an event. These will be discussed in more depth later in this section. To see these three modes, look on the right side of the edit screen in the Current Status Display. These messages will be seen during a preview, record, or auto-assembly:

CUE -- machines are cueing up
SYN -- machines are synchronizing
LOK -- machines are locked and in record

ERROR MESSAGES

When you give a command to preview, record, or auto-assemble an event, you might encounter an error message in the Current Status Display that says ESY, EHL, ECL, or ESR (see Maintenance Functions, Section 15). If this happens, the system will make three attempts to perform the preview, record, or auto-assemble. If it fails to do so, you will have to check the problem and issue the command again.

TIME SHARING DURING AUTOMATIC MODES

Preview, Record, Auto-assemble, Cue, and Replay are considered to be automatic modes. While the system is involved in any of these modes (except for Auto-assembly), you can manually control and issue commands to any machine not involved in an automatic mode.

This means that you can issue machine motion commands, make MARK, SET, and TRIM time entries, etc.

No switcher operations other than those required for the automatic event will take place.

For example, if you were previewing an event that is a Cut to the B-VTR, you could press the C-VTR SELECT key and rewind the tape, press the PLAY key and MARK IN a new edit point, then press the STOP key. (Don't press the ALLSTOP bar because it will terminate the automatic mode in progress.)

PREVIEW FUNCTIONS

FUNCTION DESCRIPTION

The Preview functions are located on the three cream colored keys labeled VVV, BVB, and VBV on the left side of the Main Keyboard. The fourth cream colored key is the REPLAY key, which will be discussed later in this section.

The Preview function lets you look at a frame-accurate rehearsal of an edit decision. The edit can be trimmed and adjusted, then previewed again until the desired results are achieved.

There are three ways to preview an entire edit and three ways to preview an edit out-point. This variety of Preview modes gives you flexible and efficient control over viewing a proposed edit.

To preview an out-point only, hold down the CTRL key as you press the desired Preview key. Previewing just the out-point saves time when rehearsing long scenes.

In the following descriptions, notice the Preview mode is followed by either (Record) or (Playback) to indicate which is the Active Channel.

BVB (Black-Video-Black)

- **BVB** (Playback)

  Previews a selected scene from playback sources by rolling only the playback VTR(s). The edit monitor will remain black until the beginning of the scene. At the end of the scene, the monitor will switch to Black again.

- **CTRL/VB** (Playback)

  Previews the last few seconds of the selected playback scene, then switches directly to Black at the out-edit point.

VBV (Video-Black-Video)

- **VBV** (Record)

  Previews materials on the Record master up to the in-edit point of a new scene, then switches to Black on the monitor. At the out-edit point, the monitor switches back to the material already laid down on the master and plays it for five seconds. This mode is useful when a scene is to be replaced by another with a different camera angle. By trimming the edit points, you can determine exactly where the camera switches were made.

- **CTRL/BV** (Record)

  Edit monitor shows Black until the out-edit point, then switches to show the material already laid down on the Record master for five seconds.

VVV (Video-Video-Video)

- **VVV**

  In this preview mode, the active channel may be either the Record or playback VTR. Both the playback and Record VTRs are cued up together. The edit monitor displays the material already laid down on the Record master, then

switches to show the new scene from the playback source, and then switches back to any video on the master. This mode is used most frequently to preview edits.

- **CTRL/VV**

  Edit monitor shows the end of the playback scene, then switches to the video on the Record master.

RECORD

The red REC (Record) key is located on the far left side of the 330XL keyboard. When you are satisfied with an edit, you can record it by holding down the CTRL key as you press the REC key. Whether or not the machines roll during Record depends on the status of the Record On/Off function, as explained below.

The CTRL and REC keys are interactive with the Menu Storage feature of the 330XL. This feature is explained at the end of Section 13.

ASSEMBLE SECTIONS

The Record On/Off and Assemble functions are accessed through the pale yellow ASMBL key in the top row of the main keyboard. When you press the ASMBL key, the following menu will be displayed:

ASSEMBLE SECTION:

1) ENABLE EVENTS.
2) DISABLE EVENTS.
3) ASSEMBLE EVENTS.
4) RECORD ON/OFF.

Because the Record On/Off function interacts directly with the REC key (see above), we will discuss it first.

RECORD ON OR OFF

FUNCTION DESCRIPTION

The current status of this function (On or Off) is always displayed in the right column of the Menu Area.

- When this function is enabled, the screen will display REC ON. This means that when you press CTRL/REC, the machines will roll.

- When this function is disabled, and the edit screen displays REC OFF, the machines will roll only during previews. When you press CTRL/REC, edits will be entered directly into the EDL without rolling the machines. The scenes will not be recorded on the R-VTR. Also, note that in REC OFF mode, you must give a duration or Out-point to each event you want to enter. Otherwise, the System Message Area will display:

  DEFINE OUT POINT

KEYBOARD INSTRUCTIONS

If you want to change the status of Record/On/Off, first press the ASMBL key. Then, when the Assemble Menu appears, press the numeric 4 key. The message, whether REC ON or REC OFF, will toggle to the opposite mode.

Record On/Off can also be accessed through the Maintenance Menu. See Section 15 for more details.

OUT-TIMES NOT REQUIRED

In the Record On mode, out-times are not required to make an edit. If no out-time is defined, the system will continue to record until you stop it. This can be done in two ways.

- At the desired out-edit point, press the REC key only (without CTRL). The system will make a clean out-edit and enter the event into the Edit Decision List. This is called "bumping out of record."

- If you wish to abort a recording in progress, press the ALLSTOP bar. The system will make a clean out-edit, but the event will not be entered into the EDL. The edit times will remain on the Menu Area of the edit screen.

UPDATED IN-TIMES

After a recording, the in-time of each machine involved in the edit is automatically increased by the total duration of the event. For example, before the event is recorded, the edit data in the Menu Area looks like this:

A1/V			IN	OUT
		R-VTR	01:00:00:00	
DIS	*	A-001	12:00:00:00	12:00:10:00
B to A 030		B-002	05:00:00:00	05:00:00:00
		AUX		
		BLACK		

Following the recording, the screen updates the new in-times by the duration of the edit. The Menu Area will now look like this:

A1/V		IN	OUT
CUT-A	R-VTR	01:00:10:00	01:00:10:00
	* A-001	12:00:10:00	12:00:10:00
	B-002	05:00:10:00	05:00:10:00
	AUX		
	BLACK		

If, in the previous example, the B-VTR had a duration, creating a delayed dissolve, the menu updates from:

A1/V		IN	OUT
	R-VTR	01:00:00:00	
DIS	* A-001	12:00:00:00	12:00:10:00
B to A 030	B-002	05:00:00:00	05:00:08:00
	AUX		
	BLACK		

To (after this edit):

A1/V		IN	OUT
CUT-A	R-VTR	01:00:18:00	01:00:18:00
	* A-001	12:00:10:00	12:00:10:00
	B-002	05:00:18:00	05:00:18:00
	AUX		
	BLACK		

The Out-time of the B-VTR is updated by its own duration plus the To Source duration to maintain the sync relationship between the A and B-VTR that may have existed at the beginning of the edit.

WHAT HAPPENS DURING RECORD

Several things happen when an edit is recorded. The following is a step-by-step description of what takes place.

NOTE: The Supervisor refers to the 330XL Central Controller.

1. When you press the CTRL/REC keys to record an edit, the Supervisor assigns the new edit the Event Number currently displayed on the left side of the Menu Area.

2. The Supervisor tells the I^2s to put their respective machines into the Cue mode. The machines search and park near the pre-roll duration ahead of the intended edit.

3. Each I^2 sends back a command to the Supervisor saying it has cued its machine.

4. The Supervisor then sends out a command to each I^2 to synchronize (SYN). The I^2s roll their respective machines and synchronize to the Master Time Clock, such that all machines will reach the edit point simultaneously.

5. The I^2s send the Supervisor a message that they are in a Lock (LOK) mode and that the R-VTR is going into record.

6. After the edit is recorded the machines come to a halt.

7. The screen automatically updates the in-times of each machine involved in the edit by the duration of the recorded event. The Menu Area is ready to begin the next edit.

8. The data for the edit just completed is automatically stored in the EDL and displayed as the highlighted event in the List Area of the edit screen.

9. If you have the Disk On or Punch On function activated, the edit data will be stored on floppy disk or punched out on papertape as a backup measure.

REPLAY

The tan REPLAY key is located to the left of the Preview keys. This key allows you to replay the highlighted event. When you press REPLAY, the Record VTR automatically becomes the active machine, is cued ahead of the event, goes into play, and continues for five seconds past the end of the new scene.

AUTO ASSEMBLY

FUNCTION DESCRIPTION

As mentioned on Page 12-6, the Auto-Assembly function is accessed by pressing the ASMBL key in the top row of the main keyboard.

In the Auto-Assembly mode, the 330XL generates an edited master videotape by automatically recording events stored on an Edit Decision List in the computer's memory. You can specify a single event,

a range of events, or the entire list to be auto-assembled.

If you change an event in the list by using the Open Re-edit function, you can re-record that event by using Auto-Assembly.

After you enter an Edit Decision List into the computer's memory, all of the events are "enabled." That means they are ready to be auto-assembled.

After each event is auto-assembled, it is "disabled." This means that the computer has placed a flag by that event as a reminder that it has already been assembled. An asterisk is placed after the event in the EDL. In addition, you can disable events in the list by using the Disable function. These disabled events will be by-passed during auto-assembly. Later, when you are ready to assemble these disabled events, you can enable them by using the Enable function.

ENABLE EVENTS

KEYBOARD INSTRUCTIONS

When the Assemble Menu is displayed, access the Enable function by pressing the numeric 1 key and ENTER. This allows you to enable an event, or group of events, that has already been auto-assembled and is currently disabled. The System Message Area displays:

ENABLE EVENTS:

You type in the event or range of events that you want to enable.

Enter one of the following responses on the keyboard, depending on the results you want to achieve:

1. A or 0 for ALL events.

2. A single event number.

3. A range of event numbers. For example, 7,10. (The comma indicates you want to enable events 7 through 10, inclusive. You may press the Allstop bar instead of a comma.)

After you type in one of these responses and press ENTER, the 330XL will carry out the instruction.

DISABLE EVENTS

KEYBOARD INSTRUCTIONS

This function allows you to disable an event, or group of events, in the list so that it will be by-passed during auto-assembly. You access it from the Assemble Menu by pressing numeric 2 and ENTER. The System Message Area displays:

DISABLE EVENTS:

Type in the desired event or range of events, in the same manner as you would for Enable Events.

ASSEMBLE EVENTS

KEYBOARD INSTRUCTIONS

This function initiates the auto-assembly mode for those events that are enabled. You access it from the Assemble Menu by pressing the numeric 3 and ENTER. The System Message Area will display:

ASSEMBLE EVENTS:

Type in the event or range of events that you want to assemble, in the same manner as you would for Enable Events (see above).

The events will be assembled in the same sequence they have in the EDL, one event after another. This scene-by-scene method of auto-assembly is known as "A-Mode Assembly."

Assembly will continue until an event is encountered that requires an unassigned reel to be mounted. When that happens, the System Message Area will display (for example):

UNABLE TO PERFORM EVENT # 009
MOUNT REEL 2
A-VTR = REEL

Type in the reel number to tell the system where the reel will be mounted. (The system will also ask you to re-assign the other reels.) After you mount the needed videotape and assign its reel number, access the Assemble function again. When the ASSEMBLE EVENTS message is displayed, resume the auto-assembly by telling the system to start with (in this example) Event 9.

If the system encounters an event that involves a reel with poor or non-existent time code, the assembly is halted and the System Message Area displays:

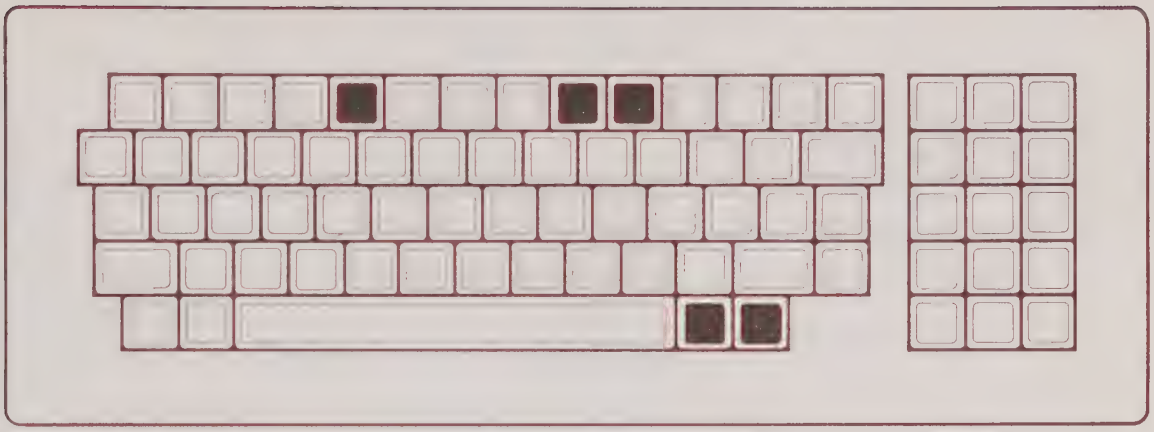
INACTIVE FRAME CODE VTR ENCOUNTERED
CONTINUE ASSEMBLY?

Because this reel has no useable frame code (time code), you will have to manually park the videotape the preroll distance ahead of the desired edit in-point. After you do this, access the Assemble function again and resume the auto-assembly from that point.

When all possible events have been assembled, the edit screen will display:

ASSEMBLY COMPLETE

The Assemble function is interactive with the Menu Storage feature, explained at the end of Section 13.



EDIT DATA ACCESS

SECTION 13 OVERVIEW

The Edit Data Access functions are divided into two categories. The four tan keys in the List Access category allow you to work with the Edit Decision List as a whole by displaying it on the screen. They also allow input, output, and printing of edit lists, using the computer's memory, floppy disk, or paper tape.

The dark brown RECALL key allows you to copy the marks from an event in the EDL into the Menu Area.

LIST ACCESS FUNCTIONS

These functions allow you to store an edit list on a floppy disk or papertape, load the list into the computer's memory, display the list again on the edit screen, and make a hard-copy printout of the list. Each of these functions will be discussed in detail on the following pages.

SCROLL UP and
SCROLL DOWN

These two keys allow you to step through your edit list as it is displayed on the edit screen. When you press one of these keys, the next event in the list will become brighter than the other edits; it is now the "highlighted event." You can refer to this highlighted event when performing certain operations by pressing the >EVNT key.

SCROLL UP makes the highlight move up on the screen, going toward the top of the list.

SCROLL DOWN makes the highlight move down on the screen, going towards the end of the list.

PRINT/DISP (Print and Display)

This tan key allows you to: (1) highlight any event on the edit screen and (2) print out the EDL in hard-copy form.

DISP (Display)
This function allows you to highlight a specified event in the List Area of the edit screen.

When you press this key, the System Message Area prompts :

DISPLAY EVENTS:

Type in the desired event number or the letter L for last event. After you press the ENTER key the

selected event will be highlighted, identifying it as the Current Event in the list.

Shift/PRINT

This shifted function allows events to be printed in hard-copy form on a Data Terminal or Line Printer.

When you press Shift/PRNT, the edit screen displays:

OUTPUT TO PRINTER EVENTS (ALL) :

There are four types of responses you can make, depending on the result you want:

1. Press ENTER for ALL events in the Edit Decision List.

2. Type in single event number to indicate that event and all events after it, to the end of the EDL.

3. A range of events can be entered by typing in the first event number followed by a comma or a space and the last event number (1,10 or 1 10 indicates events one through ten, inclusive).

4. If you want just one event, type in its event number followed by a comma and the same event number (e.g., 5,5 indicates event #5 only).

After you type in one of the above responses followed by ENTER, the edit screen will display:

PRINTING EDL

EDL INPUT/OUTPUT

The 330XL has seven features that allow you to store an edit list on a floppy disk or papertape and to load a list into the computer's memory. These functions are all accessed by one key, the tan EDL I/O key on the top row of the main keyboard.

EDL MENU SCREEN

When you press the EDL I/O key, the following menu will appear on the screen:

EDL I/O SECTION:

1) DISK ON/OFF.
2) DISK LOAD.
3) DISK SAVE.
4) DISK INITIALIZE.
5) PUNCH ON/OFF.
6) PAPERTAPE LOAD.
7) PAPERTAPE SAVE.

KEYBOARD INSTRUCTIONS

To select a function, you simply press the appropriate number key (1 through 7) and ENTER; the dialogue for that function will appear on the screen. The functions will be discussed in sequential order as they appear in the EDL I/O Menu.

DISK ON/OFF

FUNCTION DESCRIPTION

The Disk On/Off function allows you to instruct the system to store on disk each event as it is recorded and entered into the computer's memory.

This function is a back-up measure that allows you to have a record of your events as they were entered into the system.

You also have the option of storing your entire EDL at the end of the edit session by using the Disk Save function.

The status of the Disk On/Off function is always displayed on the right side of the Menu Area next to the REC ON/OFF message.

KEYBOARD INSTRUCTIONS

To change the status, press the EDL I/O key to display the Menu, and then the number 1 key. The message will immediately change to the opposite mode. In other words, if DISK OFF is displayed, press EDL I/O then the number 1 key. The message will change to DISK ON.

If your 330XL system has the punch/papertape option in addition to floppy disk you may choose to store edit data both on disk and on papertape. If both functions are on, you will see the message:

PP/DSK ON

NOTE: Remember, if no mode is displayed in the Message Area, you will be storing edit data in the computer's memory as you record each event, but you will not be entering each event onto papertape or floppy disk.

DISK LOAD

FUNCTION DESCRIPTION

The Disk Load function allows you to transfer an Edit Decision List from floppy disk into the computer's memory.

NOTE: Before you load an edit list, be sure to delete all edits currently in the computer's memory. If you don't, those edits with identical event numbers will be deleted and replaced with the new edits that will be loaded in.

KEYBOARD INSTRUCTIONS

To select the Disk Load function, press the EDL I/O key, the number 2 key, and ENTER. The system will first ask how you want to sort the edit list you are about to load. The edit screen will display either:

SORT ON?

or

SORT OFF?

By pressing the N key, the message will toggle to the opposite mode. Once the desired mode is displayed on the screen (either SORT ON or SORT OFF), give an affirmative response.

If you request the SORT ON mode, the edit screen will ask either:

SORT BY RECORD TIME?

or

SORT BY EVENT #?

By pressing the N key, the message will toggle to the opposite mode. When the desired mode is displayed, give an affirmative response.

NOTE: It is best to load an edit list by the SORT BY RECORD TIME mode. However, you would want to load an edit list in the SORT OFF mode if the person who generated the list sorted it in a certain way for some specific reason. (For example, all the audio-only or video-only edits may be grouped together.)

The next question on the edit screen is either:

NON-DROP FRAME?

or

DROP FRAME?

Pressing the N key will toggle the message to the opposite mode. Your response to this question tells the computer which type of timecode (NDF or DF) was on the Record Master videotape when the EDL was generated.

NOTE: In order for your time code values to be computed properly, you must give a correct response if the edit list was generated on another manufacturer's computer editing system.

After you give an affirmative response to the time code question, the disk drive will load the EDL into the computer's memory.

Any notes in the edit list will be displayed on the edit screen following the event they are associated with.

DISK SAVE

FUNCTION DESCRIPTION

This function allows you to transfer edit data in the computer's memory onto the floppy disk. In most cases you will use the Disk Save function at the end of an edit session to store your entire Edit Decision List onto the floppy disk for future reference.

(Be sure that your EDL disk is properly initialized before attempting to store data on it. See Disk Initialize, following this discussion, for details.)

KEYBOARD INSTRUCTIONS

To select Disk Save press the number 3 key, and ENTER. If there is already an EDL on the floppy disk, the edit screen will display:

ADD EVENTS TO EDL ON DISK?

This message informs you there are already events stored on the floppy disk, and any new edits will be stored immediately after the old edit list.

If you answer No, the system will exit from the dialogue. If you answer Yes, the edit screen will then display:

OUTPUT TO DISK EVENTS (ALL):

The edit screen will display this same message if there are no edits stored on the floppy disk. If you wish to store ALL edits in the list, just press ENTER. If you want to store just one edit, type in the event number followed by a comma and the same number again. After you press ENTER, the requested events will be stored on the floppy disk.

While this process is being carried out, the edit screen will display:

TRANSFERRING EDL TO DISK

DISK INITIALIZE

FUNCTION DESCRIPTION

This function allows you to initialize the floppy disk to prepare it for storing an Edit Decision List. This function is used when you have a new floppy disk or a used floppy disk whose EDL you no longer want.

KEYBOARD INSTRUCTIONS

To select Disk Initialize, press the EDL I/O key, the number 4 key and ENTER. The edit screen displays:

INITIALIZE DISK (DELETE OLD CONTENTS)?

To indicate an affirmative response, press the Y key (the ENTER key is inactive in this case as a protective measure). The disk will now be completely erased and formatted to accept edit data. If you had entered a No response, the system would have exited from the dialogue.

Sometimes when you attempt to use the Disk On or Disk Save feature, you may forget to initialize the disk. If this happens, the edit screen will display:

DISK NOT INITIALIZED FOR EDL, NO ACTION.

You will also see this message if you try to use the NOTE key to add notes to an EDL on an uninitialized disk.

When you see this message, you need to initialize the disk so that it can prepare a file to accept the edit data.

ERROR AND WARNING MESSAGES

The 330XL has several safeguards to protect you from inadvertently using your floppy disk drives incorrectly.

- If you try to load an EDL from a disk that does not have an edit list stored on it, the edit screen will display:

  NO EDL ON DISK

  This message lets you know that the wrong disk is probably in the drive.

- If the disk is not completely in the drive unit or the drive door has not been shut properly, the edit screen displays:

  DISK READ ERROR

- If you have inadvertently put the Supervisor disk in the drive and pressed the Y key, the edit screen will display:

  SUPERVISOR DISK IN DRIVE, NO ACTION

  This message lets you know you have inserted the Supervisor disk instead of the EDL disk.

- If the edit screen displays this message:

  DISK WRITE ERROR

  There are three possible problems:

1. No disk is loaded in the drive unit.
2. Drive door is not shut properly.
3. Disk is "write-protected" and new data cannot be stored on it.

DISK WRITE-PROTECTED

Some floppy disks come with a notch at the bottom of the disk. If this notch is covered with an adhesive tab (normally supplied with the disk), you can store data on the disk.

If the tab has been removed, new data cannot be stored on the disk, and existing data cannot be erased. It is considered to be "write-protected".

If you have a floppy disk that you want to guard against having its present contents deleted, simply peel off the adhesive tab.

PUNCH ON/OFF

FUNCTION DESCRIPTION

The Punch On/Off function allows you to instruct the system to store on papertape each event as it is recorded and entered into the computer's memory.

This function is a back-up measure that allows you to have a record of your events as they were entered into the system.

You also have the option of storing your entire EDL on papertape at the end of the edit session by using the Papertape Save function.

If your 330XL system has papertape peripherals, the status of the Punch On/Off function is always displayed on the right side of the Menu Area next to the REC ON/OFF message.

- If the Punch is not on (and the Disk is not on either), no message will be displayed.

- If both the Punch and the Disk are on, the following message will be displayed:

PP/DSK ON

- If only the Punch is on, you will see the message:

PUNCH ON

KEYBOARD INSTRUCTIONS

To change the status, press the EDL I/O key to display the Menu, and then the number 5 key. The message will immediately change to the opposite mode. For example, if no message is displayed, press EDL I/O and the number 5 key. The message PUNCH ON will appear.

NOTE: Remember, if no mode is displayed in the Message Area, you will be storing edit data in the computer's memory as you record each event, but you will not be entering each event onto papertape or floppy disk.

If you do not have papertape peripherals in your system, the Punch On/Off function will be disabled.

PAPERTAPE LOAD

FUNCTION DESCRIPTION

The Papertape Load function allows you to transfer an Edit Decision List from papertape into the computer's memory.

NOTE: Before you load an edit list, be sure to delete all edits currently in the computer's memory. If you don't, those edits with identical event numbers will be deleted and replaced with the new edits that will be loaded in.

KEYBOARD INSTRUCTIONS

To select the Papertape Load function, press the EDL I/O key, the number 6 key, and ENTER. The system will first ask how you want to sort the edit list you are about to load. The edit screen will display either:

SORT ON?

or

SORT OFF?

By pressing the N key, the message will toggle to the opposite mode. Once the desired mode is displayed on the screen (either SORT ON or SORT OFF), give an affirmative response.

If you request the SORT ON mode, the edit screen will ask either:

SORT BY RECORD TIME?

or

SORT BY EVENT #?

By pressing the N key, the message will toggle to the opposite mode. When the desired mode is displayed, give an affirmative response.

NOTE: It is best to load an edit list by the SORT BY RECORD TIME mode. However, you would want to load an edit list in the SORT OFF mode if the person who generated the list sorted it in a certain way for some specific

reason. (For example, all the audio-only or video-only edits may be grouped together.)

The next question on the edit screen is either:

NON-DROP FRAME?

or

DROP FRAME?

Pressing the N key will toggle the message to the opposite mode. Your response to this question tells the computer which type of time code (NDF or DF) was on the Record Master videotape when the EDL was generated.

NOTE: In order for your time code values to be computed properly, you must give a correct response if the edit list was generated on another manufacturer's computer editing system.

After you give an affirmative response to the time code question, the system will load the EDL from papertape into the computer's memory.

Any notes in the edit list will be displayed on the edit screen following the event they are associated with.

PAPERTAPE SAVE

FUNCTION DESCRIPTION

This function allows you to transfer edit data from the computer's memory onto papertape. You will most often use the Papertape Save function at the end of an edit session to store your entire EDL onto papertape for future reference.

To select Papertape Save press the EDL I/O key, the number 7 key, and ENTER. The edit screen will then display:

OUTPUT TO PUNCH EVENTS (ALL):

If you wish to store ALL edits in the list, type in the first event number followed by a comma (or a space) and the last event number of the group of edits you wish to store. If you want to store just one edit, type in the event number followed by a comma and the same number again. After you press ENTER, the requested events will be punched onto the papertape.

RECALL FUNCTION

The dark brown RECALL key is located on the top row of the main keyboard. This function allows you to recall to the Menu Area the edit times (or marks) of an event in the list. When you press the RECALL key, the edit screen asks:

RECALL MARKS FROM EVENT #

Type in the desired event number and press the ENTER key. The edit screen will then display the desired times in the Menu Area of the screen. The System Message Area will display:

DISPLAYING MARKS FROM EVENT # XXX

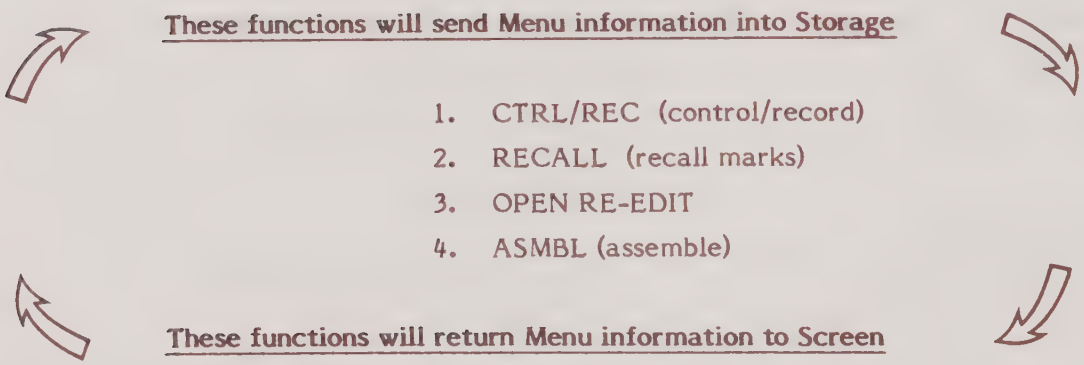
To clear this prompt from the System Message Area, press the ALLSTOP bar.

The RECALL key is interactive with the Menu Storage feature of the system, which is explained at the end of Section 13.

MENU STORAGE

The Menu Storage is a one-page "buffer" in the computer memory which helps you in your edit operations. Whenever you engage any of the functions listed on the next page, this Menu Storage temporarily stores one page of Menu information. This means that when the system has completed the requested function, it can restore to the screen certain information that was in the Menu previously. Specifically, machine In-times and Out-times and durations, edit mode and transition type, are all restored to the screen from Menu Storage.

Look at the Menu Storage as a flow chart:



These functions will send Menu information into Storage

1. CTRL/REC (control/record)
2. RECALL (recall marks)
3. OPEN RE-EDIT
4. ASMBL (assemble)

These functions will return Menu information to Screen

1. INSERT EVENT
2. CLOSE RE-EDIT
3. (Assembly complete)

When you engage one of the "send functions", the computer copies the present Menu information into the storage buffer, erasing what was previously there.

Any one of the "return functions" will erase the present Menu and copy the buffer information back to the screen.

For example, if you assemble an event, and the assembly is complete, the information from the edit you were working on before the assembly will be restored to the screen.

Likewise, if you re-edit an event, and close re-edit when you are done, the information from the edit you were working on previously will return to the screen.

Remember that the Menu Storage is a one page only memory; i.e., when you perform any of the "send functions", you erase the current contents of the buffer entirely.

Understanding Menu Storage is not critical to normal edit operations, but knowing how it works can save you much time in an edit session. Understanding Menu Storage also explains why certain Menu information appears on the screen after Re-edits and Assemblies.

LIST MANAGEMENT

SECTION 14 OVERVIEW

List Management is the process of reorganizing and manipulating an Edit Decision List. Specifically, List Management enables you to move, sort, delete, renumber, and modify a single event, a group of edits, or the entire Edit Decision List.

These functions are used not only to make creative editing changes, but also to clean up a list so it can be efficiently auto-assembled.

Several of these functions (Move Event, Insert Event (with a list update), Delete Events, and Record Start) were designed to work with edit lists that are sorted by Record In-time.

LIST MANAGEMENT MENU

To access the List Management functions, press the orange LIST MGMT key in the top left row of the Main Keyboard. The following Menu will appear on the screen:

LIST MANAGEMENT SECTION:

1) OPEN RE-EDIT.
2) CLOSE RE-EDIT.
3) INSERT EVENT.
4) DELETE EVENTS.
5) RENUMBER EVENTS.
6) RECORD START.
7) MOVE EVENT.
8) SORT ON/OFF.
9) SORT BY RECORD IN/EVENT #

When this Menu is displayed, you select each function individually by pressing its corresponding number key, followed in some cases by ENTER.

The first three functions are the Re-edit Mode functions. They allow you to change a single event in the list. Sections 4 though 9 are the List Manipulation functions; they allow you to re-arrange and modify your list as a whole.

The functions will be discussed in the order in which they appear in the Menu. After this discussion, there is an explanation of how to keep a clean edit list.

RE-EDIT MODES

Sections 1, 2, and 3 allow you to call up a single event stored in the edit list, change it, then insert the revised edit back into the list.

- With **OPEN RE-EDIT** you can call a stored edit up from the list for revision. An edit may be previewed in the Re-edit mode, but it can't be recorded or auto-assembled.

- **INSERT EVENT** inserts the revised edit back into the edit list, closes the Re-edit mode, and returns the system to the previous editing operations. The Insert Event feature is interactive with the Menu Storage feature of the 330XL, which is explained at the end of Section 13.

- **CLOSE RE-EDIT** allows you to exit from the Re-edit mode if you decide not to revise an edit after all. The Close Re-Edit function is also interactive with the Menu Storage feature of the 330XL.

The following discussion describes the procedure to use when changing an edit in the list.

OPEN RE-EDIT

During Open Re-edit, the edit's Record Out-time is displayed instead of its duration. The addressed machine will always be the R-VTR, never the playback source. Remember that the Record duration takes precedence in Re-edit, just as it does in normal record.

KEYBOARD INSTRUCTIONS

To access Open Re-edit, press the LIST MGMT key, then the number 1 key. The edit screen displays:

RE-EDIT NO:

Type in the event number of the edit you wish to change, and press ENTER. The screen then displays :

SAVE/RECALL (S/R)?

This message gives you the opportunity to "save" (temporarily store in memory) the edit exactly as it is presently displayed in the list. There are three possible responses to this question:

1) If you press ENTER, you can totally by-pass this option. Most editors use this response because they go into the Re-edit mode with the intention of changing an edit, and don't foresee the need to save the original version of it.

2) If you type the letter S, the edit will be saved in its present form so you may recall it later. A saved edit is displayed in the list with the letter S following its event number (11S). The computer ignores a saved edit if you auto-assemble the list and does not store it on papertape or floppy disk.

   NOTE: If your list is being sorted by Record-In time, the saved event will immediately follow the original. With Sort by Event # or Sort Off, the saved event will be placed at the bottom of the list.

3) Once an event has been saved, it can be recalled from the list by going into the Re-edit mode and typing the letter R when the SAVE/RECALL (S/R)? message is displayed on the screen. The saved edit will be retrieved from the edit list and displayed in the Menu Area. You now have the option of inserting the saved edit back into the list by using the Insert Event function, thereby replacing the newer version of the edit. If you want to delete the saved edit totally, use the Delete Event feature, explained later in this section.

When you enter one of the above responses and press the ENTER key, the edit data of the requested event will be displayed in the Menu Area of the screen. (The event previously displayed is placed into Menu Storage; it will reappear on the screen when you leave the Re-edit mode.)

In Open Re-edit, you can make any desired changes to the edits in the list. For instance, you can trim the In- and Out-points of the playback or Record times. You can change the duration of a transition, change a dissolve to a wipe, change an edit from video to audio only, etc. You can also clean the edit list of over-records.

The Open Re-edit function is interactive with the Menu Storage feature of the 330XL, which is explained at the end of Section 13.

INSERT EVENT

KEYBOARD INSTRUCTIONS

After you preview the modified edit and are satisfied with the new version, access INSERT EVENT by pressing LIST MGMT, then the number 2 key.

If you have changed the Record In-time or the duration of the edit, the screen will display :

LIST UPDATE?

This function allows you to change the record times of those events that come after the modified edit. In other words, List Update will pull up the record times if the modified edit was shortened or it will push down the record times if the modified edit was extended.

- If you don't want the list updated, press the N key.
- If you do want the list updated, press the Y key.

NOTE: The ENTER key is inoperative in this case as a safeguard against an accidental affirmative response.

If you answer Yes to LIST UPDATE, the edit screen will then display:

UPDATE THROUGH EVENT #:

You can respond by typing A, 0, or L (for Last Event) to indicate you desire a list update for ALL the events following the modified edit. Or you can type in the event number that you want the Record times to update through and press the ENTER key.

- The modified edit will be inserted into the list in the computer's memory, the system will come out of the Re-edit mode, and the 330XL will return to the previous operations mode.

- Whatever edit data was displayed on the Menu Area before you went into the Re-edit mode will now return to the edit screen.

- If you wish to record the modified edit, press the ASMBL key and auto-assemble the desired event.

The Insert Event is interactive with the Menu Storage feature of the 330XL, which is explained at the end of Section 13.

LIST MANIPULATION

The six List Manipulation functions allow you to re-arrange and modify your Edit Decision List as a whole. The functions (numbered 4 through 9 on the List Management Menu) will be explained in the order they appear in the Menu.

DELETE EVENTS

FUNCTION DESCRIPTION

This function allows you to delete one or more edits from the list with the option of pulling up the Record times to close up the time hole that was created. The Delete function is also used to clear out all events in memory so you can load a new EDL. Afterward the EDL will scroll to the last edit prior to the edit(s) deleted.

KEYBOARD INSTRUCTIONS

Press the LIST MGMT key, then the number 4 key. The System Message Area displays:

DELETE EVENTS :

You can enter any of the following four responses :

1) Type the event number of a single edit you want to delete.

2) If you want to delete a group of edits, enter the first event number followed by a comma sign and the last event number in the range of edits.

3) Type L to indicate you want to delete the Last Event in the list.

4) Type A to indicate ALL events if you want to

clear the entire list from the computer's memory.

If you indicate you want to delete ALL events, the edit screen will display :

DELETE ALL EVENTS?

Press the ENTER key if you do. This question is a safeguard to prevent you from accidentally deleting all events.

If you indicate you want to delete a single edit or a group of edits, the edit screen will display:

PULL UP?

If you answer N for No, the Record times following the deleted edit will not be affected. If you press the Y key, the system will close up the time hole that was created by the deleted edit. The system takes the total duration of the edit or edits you are deleting, and subtracts that amount from all of the Record times that follow the deleted edit.

CAUTION: If the edit you deleted is an <u>over-record</u>, DO NOT say yes to list PULL-UP.

For example, suppose the deleted edit has a total duration of 8 seconds, but appears on the screen for only 5 seconds because the deleted edit's Record out-time is 3 seconds longer than the following edit's Record in-time.

If you were to say Yes to List Pull Up in this case, your Record times following the deleted edit would be pulled up by 8 seconds instead of the desired 5 seconds.

You have two options to remedy this situation :

1) You can use the Re-edit mode and trim the edit's out-time before you delete it. Then you can say Yes to List Pull Up.

2) Or you can say No to List Pull Up and then use the Record Start function to pull up the Record times by the proper amount.

RENUMBER EVENTS

This function allows you to renumber the edits in your list, with the option of changing all or some of the event numbers in the EDL.

KEYBOARD INSTRUCTIONS

To access this function, press LIST MGMT, then the number 5 key. The Message Area displays :

RENUMBER ALL EVENTS?

If you wish to renumber all the events, press the Y or ENTER key. If you want to change some but not all of the event numbers, press the N key and the screen will display :

START RENUMBERING AT OLD EVENT # :

Type in the number of the event where you want the renumbering to begin and press ENTER.

Whether you indicate you want to renumber all events or start renumbering at a specified event, the screen will display :

BEGIN NEW NUMBERING SEQUENCE WITH # :

Type in the desired new number and ENTER. Your list will be re-numbered accordingly, starting with the first old event requested through all of the remaining event numbers in the list.

RECORD START

FUNCTION DESCRIPTION

This function gives you the flexibility of modifying the Record times in an edit list in two ways :

- By assigning a new Record Start time.
- By adjusting the Record times to create or close up a time hole.

KEYBOARD INSTRUCTIONS

Press the LIST MGMT key, then the number 6 key. The edit screen displays :

CHANGE RECORD IN TIMES
STARTING EVENT # =

Type in the event number where you want the change in Record times to begin. After you press the ENTER key, the edit screen will display:

FC VALUE =

You have the option of entering the Frame Code Value (time code number) in two ways, depending on the effect you want to achieve :

- If you want to assign a new Record Start time to your edit list, then enter the desired time code location. The Record times of the specified edits will be updated accordingly.

  You could use this function when an off-line EDL has been created that has a different Record start time from the Record master videotape that will be used to auto-assemble the on-line version of a show.

  For example, let's say the first edit in the off-line list has a Record start time of 1:01:00, but the Record master tape has been time coded so that the first edit should begin at 2:00:00:00. The Record times in the list can be changed by using the Record Start function and entering 2:00:00:00 for the FC VALUE. The rest of the Record times in the list will be updated accordingly.

- The second type of entry you can make is when you want to create or close up a time hole in your edit list. In this case, you would enter a plus (+) or minus (-) sign and the duration of the designated time change.

  For example, if you want to create a 30-second hole for a commercial between segments of a show, you would type in (plus) +30:00.

If you want to close up a hole or gap in the record times of the edit list, you would type in (minus) -10:00, or whatever the duration is of the time hole.

After you enter the desired time code value and press ENTER, the edit screen will display :

UPDATE THROUGH EVENT # =

You may type A, or L (for the Last Event), or 0 (zero), to indicate you want the time code values to be updated through the rest of the edits in the list. Or you may type in a specific event number where you want the update of the Record times to terminate.

After you press the ENTER key, the specified edits in your list will be changed according to your instructions.

MOVE EVENT:

FUNCTION DESCRIPTION

This function allows you to move one or more edits to another location in the Edit Decision List.

The Record In and Out-times will be re-arranged accordingly to make room for the moved events.

NOTE: The Move Event function will only work in SORT ON mode. If SORT OFF is displayed and you call up Move Event, the message "SORT MODE IS OFF" will appear on the screen.

KEYBOARD INSTRUCTIONS

To access this function, display the List Management Menu, then press the number 7 key. The System Message Area displays :

CHANGE POSITION AND REC IN/OUT TIMES
MOVE EVENT # :

Type in the number of the event you want to move. If you want to move a group of edits, enter the first event number followed by a comma and the last event number of the block of edits you want to move. After you press the ENTER key, the edit screen will display the following question:

TO FOLLOW :

Type in the number of the event that you want your moved edit(s) to follow and ENTER. Now, depending on the type of move you are making, the edit screen may or may not display:

PULL UP?

If this message is displayed, you must enter a Yes or No response, depending on how you want your Record times changed (see explanation below). Your edit will now be moved to the desired location in the list.

SPECIAL INFORMATION

MOVING EDITS WITH OVER-RECORDS

DO NOT move an edit that is an over-record. Make sure that the edit to be moved and the edit it is to follow are both clean edits. (A clean edit is one that is not an over-record; its Record Out-time is the same as the next edit's Record In-time.) If these edits are not clean, your edit list will be pulled up

incorrectly, meaning the Record times will be changed by the wrong amount during the Move procedure. When you move an edit, the 330XL gives a new Record In-time that is the same as the Record Out-time of the new event it is to follow. Then the system updates the Record times of the rest of the list by the durations of the moved edit. Obviously, if you had an edit that was an over-record and moved it to another point in the list, the 330XL would update the Record times by the wrong amount. The solution is to "clean" the edit before you move it by using the Re-edit mode, as explained on Page 14-3.

LIST PULL-UP

When you move an edit with a higher Record In-time to an earlier point in the list (to follow an event with a smaller Record In-time), the edit screen does not ask for list PULL UP. This is because the 330XL takes the duration of the moved edit and makes room for it earlier in the list. In the process, it pushes down the Record times of the in-between edits to fill in the time hole where the moved edit originally was located.

If Event 5 is moved to follow 2, its Record times will be automatically updated. Event 5 will be given a new Record In-time that is the same as Event 2's Out-time. The Record times of Events 3 and 4 will be increased by the duration of Event 5, thereby leaving no time holes.

When you move an edit to a later location in the list, the system will ask for list PULL UP. The 330XL takes the duration of the moved edit and increases the Record times to make room for the moved edit. You are given the option to pull up the time hole that was created when the edit was moved to a later point in the list.

If Event 2 is moved to follow #5, you are given the option of updating the Record times to close up the time hole between Events 1 and 3. If Event 2 is a clean edit, it is safe to give an affirmative response to the PULL UP question. Event 2 is given a new Record In-time that is the same as Event 5's Out-time. The Record times of all edits following Event 5 will be automatically updated by the duration of Event 2.

SORT ON/OFF

FUNCTION DESCRIPTION

The Sort On/Off function allows you to maintain the order of the events in your Edit Decision List.

The sort mode is always displayed on the left side of the edit screen in the Menu Area directly above the Event Number.

- The Sort Off function maintains the Edit Decision List in the same sequence as you enter each event.

- The Sort On function will re-order events in the list, sorting them either by Record In-Time or Event number. When Sort On is activated, you will see one of the following messages:

SORT REC-IN or SORT EVENT #

KEYBOARD INSTRUCTIONS

To access Sort On/Off, press the LIST MGMT key and the number 8 key. The Sort Mode message will immediately toggle to the opposite mode. For example, if either SORT REC-IN or SORT EVENT # is displayed, and you press LIST MGMT/8, the message will change to SORT OFF.

SORT BY RECORD IN/EVENT #

If you have decided that you want SORT ON enabled, you next must choose whether the system will sort by Event number or Record In-time.

KEYBOARD INSTRUCTIONS

To access the Record In Time/Event # function, first be sure you have enabled SORT ON. Then press the LIST MGMT key, and the number 9 key. Whatever message was displayed (either SORT REC-IN or SORT EVENT #), it will toggle to the opposite mode.

- If the Sort Event # mode is active, your edits will be placed into the list with their event numbers in ascending order.

NOTE: Be careful when using the SORT EVENT # mode because it is difficult to catch any time holes in your list. Also, DO NOT move edits in this mode because you may have a problem keeping your Record In and Out-times straight.

- If the Sort Rec-In mode is used, each edit will be placed into the list in the order that it appears in the show.

Sorting your list by Record In-times is the safest way to maintain your list. You can quickly check the Record In and Out-times to see if you have any time holes or over-records in your list. Also, the 330XL List Management functions work predictably only on lists sorted by Record In-time.

In actual practice you will note that the SORT REC-IN is not purely that. Example A shows three edits sorted purely by Record In-time. Edit #3, which was performed after edit #2, is sorted between edits 1 and 2. In a re-assembly of this list most of edit #3 would be erased by the subsequent recording of edit 2. The 330XL does not use a pure Sort by Rec-In for this reason. In example B the same edit list used in example A is sorted so that the Video-only edit #3 is sorted after the edit into which it falls. In other words the 330XL Sort by Rec-In works as follows:

If two or more edits cover the same time period in a show, the edit that was performed last will be sorted last.

The Sort mode is active as you enter each event into the computer's memory. If you change the Sort mode, the system will not re-arrange an edit list already stored in the 330XL memory. For instance, if you have been entering edits and sorting them by event numbers, you can't change to Sort by Record In and expect your stored list to be re-arranged according to Record In-times. If you wish to change the order of your list, you must dump it onto

papertape or floppy disk and then re-load the list into the computer's memory using the Disk Load or Papertape Load function. These functions let you select the mode you would like for sorting your list (see description of these features in Section 13).

EXAMPLE A

TITLE: PURE SORT BY RECORD IN TIME
FCM:

001	001	B	C	01:24:15:16	01:24:25:22	01:00:00:00	01:00:10:06
003	002	V	C	02:26:11:00	02:26:16:01	01:00:08:09	01:00:13:10
002	002	B	C	02:25:58:16	02:26:11:00	01:00:10:06	01:00:22:20

EXAMPLE B

TITLE: CMX SORT BY RECORD IN TIME
FCM:

001	001	B	C	01:24:15:16	01:24:25:22	01:00:00:00	01:00:10:06
002	002	B	C	02:25:58:16	02:26:11:00	01:00:10:06	01:00:22:20
003	002	V	C	02:26:11:00	02:26:16:01	01:00:08:09	01:00:13:10

NOTE: A Re-edit of a master scene (such as edit #2 in the above examples) will cause that edit to be sorted after any inserts into that scene.

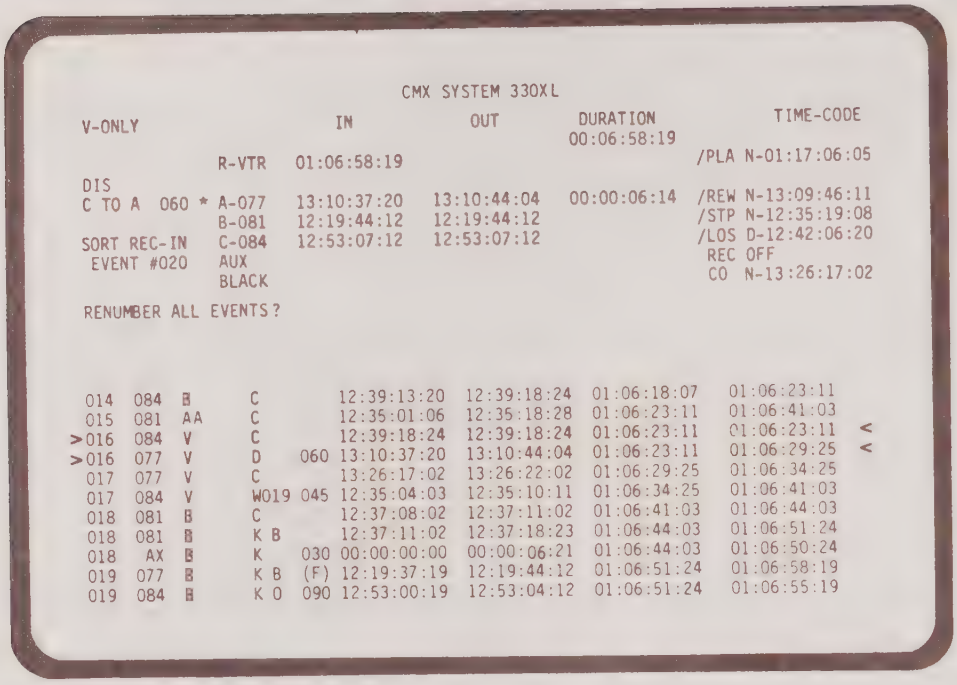
WHAT'S A CLEAN EDIT LIST

If the Record out-time of an edit has the same time code number as the next edit's Record In-time, then this is considered a "clean edit." This means there is no over-lap or over-record between the two edits. A clean edit list is ideal for auto-assembly because there is no problem of the wrong footage being laid down over a desired scene. But it's often impractical to keep a clean edit list as you're editing a show.

Most editors typically over-record a scene. They lay down more footage onto the Record tape than they will probably need. Then they go back and select a new edit point on the Record tape to begin the next edit. The result is usually an aesthetically pleasing show, but a very "dirty" edit list.

When you are on-lining a show and will probably not need to auto-assemble it or go back and make changes, then it's not as important to keep a clean edit list.

But if you are off-lining a show that will be auto-assembled or will probably be changed at a later date, it's best to keep a clean list with each Record out-time equaling the next edit's Record in-time. Obviously, when you record a long audio-only or video-only edit and then make insert edits within the long scene, the Record out-times won't equal the next edit's Record in-times.

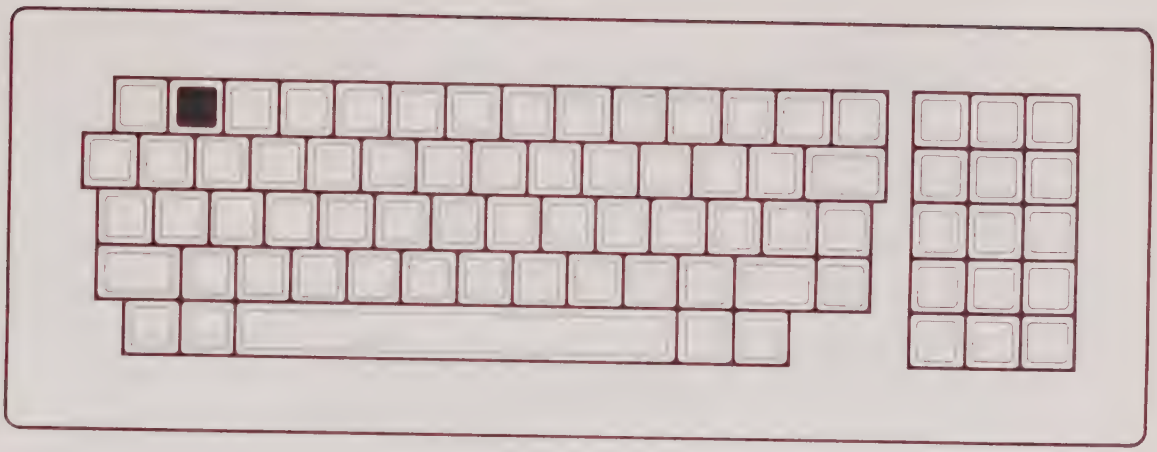


```
                                CMX SYSTEM 330XL

V-ONLY                          IN          OUT         DURATION      TIME-CODE
                                                        00:06:58:19
                    R-VTR       01:06:58:19                           /PLA N-01:17:06:05
DIS
C TO A  060 *       A-077       13:10:37:20 13:10:44:04 00:00:06:14   /REW N-13:09:46:11
                    B-081       12:19:44:12 12:19:44:12               /STP N-12:35:19:08
SORT REC-IN         C-084       12:53:07:12 12:53:07:12               /LOS D-12:42:06:20
 EVENT #020         AUX                                                REC OFF
                    BLACK                                              CO  N-13:26:17:02
RENUMBER ALL EVENTS?


 014  084  B      C          12:39:13:20 12:39:18:24 01:06:18:07 01:06:23:11
 015  081  AA     C          12:35:01:06 12:35:18:28 01:06:23:11 01:06:41:03
>016  084  V      C          12:39:18:24 12:39:18:24 01:06:23:11 01:06:23:11 <
>016  077  V      D      060 13:10:37:20 13:10:44:04 01:06:23:11 01:06:29:25 <
 017  077  V      C          13:26:17:02 13:26:22:02 01:06:29:25 01:06:34:25
 017  084  V      W019 045   12:35:04:03 12:35:10:11 01:06:34:25 01:06:41:03
 018  081  B      C          12:37:08:02 12:37:11:02 01:06:41:03 01:06:44:03
 018  081  B      K B        12:37:11:02 12:37:18:23 01:06:44:03 01:06:51:24
 018   AX  B      K      030 00:00:00:00 00:00:06:21 01:06:44:03 01:06:50:24
 019  077  B      K B  (F)   12:19:37:19 12:19:44:12 01:06:51:24 01:06:58:19
 019  084  B      K 0  090   12:53:00:19 12:53:04:12 01:06:51:24 01:06:55:19
```

For example, notice on the edit list shown, how the Record Out-time of Event #14 equals the In-time of Event #15. But #15's Out-time is not equal to #16's Record In-time because #15 is a long audio-only edit. Notice Events 16 and 17 are video-only edits that are inserted within the duration of #16's audio. Thus, the Out-time of #15 (1:06:41:03) does equal the Out-time of #17 and the In-time of #18. Therefore, Events #14 through #18 are clean.



THE MAINTENANCE FUNCTIONS

SECTION 15 OVERVIEW

This chapter will discuss three areas:

1) Maintenance Sections
2) PAL Maintenance Sections
3) Error Messages

MAINTENANCE SECTIONS

There are eleven Maintenance Sections currently active, with room to add additional functions in the future. These functions are used for routine maintenance procedures and to set-up the system at the beginning of an edit session.

The maintenance functions can be accessed by pressing the gray MAINT key, in the top row of the Main Keyboard. When the Menu of Maintenance Sections appears on the screen, you press the key corresponding to the function you want. Representations of two Maintenance Menus (for full-effects and cuts-only systems) appear on the following page.

MENU FOR 330XL SYSTEM WITH EFFECTS SWITCHER

MAINTENANCE SECTION

1) JAM SYNC ON/OFF.
2) REC ON/OFF.
3) COLOR FRAME.
4) SYSTEM PHASE.
5) UNUSED WITH EFFECTS SWITCHER.
6) CAPSTAN OVERRIDE.
7) UNUSED.
8) PAL PAIRING TOGGLED.
9) COLOUR FRAMING TOGGLED.
10) FADE TO FROM-SOURCE.
11) FADE TO TO-SOURCE.
12) FADE 50%.

MENU FOR 330XL SYSTEM WITH CUTS-ONLY (5 X 1) SWITCHER

MAINTENANCE SECTION

1) JAM SYNC ON/OFF.
2) REC ON/OFF.
3) COLOR FRAME.
4) SYSTEM PHASE.
5) SET PRE-SWITCH TIME FOR 5X1.
6) CAPSTAN OVERRIDE.
7) UNUSED.
8) PAL PAIRING TOGGLED.
9) COLOUR FRAMING TOGGLED.
10) UNUSED FOR 5X1 SWITCHER.
11) UNUSED FOR 5X1 SWITCHER.
12) UNUSED FOR 5X1 SWITCHER.

Maintenance Sections 8 and 9 are not used in NTSC systems. The Menu entry for these will be UNUSED IN NTSC. Each Maintenance Section is discussed in detail below.

JAM SYNC ON/OFF (Section 1)

WHEN TO USE SECTION 1

The JAM SYNC feature allows tapes to be used for recording purposes with only the first 30 to 60 seconds of the tape pre-striped with time code and black video to provide a header of sufficient length for cueing for the first edit. Time code is read from the tape during the R-VTR cueing and synchronizes

the time code generator on the Jam Sync card with the time code on the R-VTR tape. When the R-VTR starts to do an assemble recording, the generator provides time code that is layed down with the edit, contiguous with the header time code.

During JAM SYNC operations the following functions are inhibited:

- Out Previews involving the R-VTR
- Audio-Only events

HOW TO USE SECTION 1:

JAM SYNC is a toggle function. To activate JAM SYNC, press the MAINT key and the number 1 key. Immediately, the R-VTR out-time in the Menu is replaced by the message:

** JAM SYNC **

To de-activate JAM SYNC operations, press MAINT and the number 1 key again. The exit is immediate.

RECORD ON/OFF (Section 2)

WHEN TO USE SECTION 2:

- Use Maintenance Section 2 to alternately enable or disable the Record function of the 330XL.

- When the function is enabled, the right side of the Menu Area will display REC ON. If you want to roll the machines and record an event onto the Master videotape, you must activate the REC ON function.

- In the REC OFF mode, the system will store each edit when you press the CTRL/REC keys, but will not roll any machines. An occasion to use the REC OFF mode is when you want to enter pre-determined events into the computer's memory.

You can determine the in and out-times of edits prior to a CMX session by writing them down as you view the raw footage or after a show has been edited on a pulse-count system using cassette dubs with burned-in or window time code. Once these predetermined edits have been entered into the computer's memory in the REC OFF mode, the Edit Decision List can be auto-assembled with the system in the REC ON mode.

HOW TO USE SECTION 2:

Record On/Off is a toggle function. To access it, press the MAINT key to display the Maintenance Menu; then press the number 2 key. The screen message (either REC ON or REC OFF) will immediately toggle to the opposite mode.

NOTE: If you are in the REC OFF mode, you must give a duration and/or out-time to each event you want to enter. You can't enter an open-ended edit into the list when you are in the REC OFF mode. If you do try to enter an edit with no duration, the System Message Area will display:

DEFINE OUT POINT

COLOR FRAME

Section 3

WHEN TO USE SECTION 3

- At the beginning of an edit session, make a trial edit onto the Record master videotape. If the picture on the video monitor shifts at the beginning of the edit point, check color framing.

- A picture shift may occur during the edit session when you use a Record master videotape that has non-continuous time code. Check color framing.

- If the computer needs to be re-started during a session, re-check color framing.

HOW TO ENTER SECTION 3

Press the MAINT key, the number 3 key and ENTER. The edit screen will display:

COLOR FRAME = 0 ?

If the picture shifted when you made a trial edit, press the N key. The edit screen will now display:

COLOR FRAME = 1 ?

Press the Y or ENTER key, and the mode is accepted. (Pressing N toggles the mode back to 0.)

PAL COLOUR FRAME

If your editing system is PAL, the dialogue will be slightly different. After you enter Maintenance Section 3, the screen will display the message :

PAIRING = Ø ?

If you press N, this message will toggle to PAIRING = 1 ? When the screen displays your choice, either Ø or 1, press ENTER. Now the screen will display:

COLOUR PHASE = Ø ?

Again, you can toggle between Ø and 1 , and press ENTER when your choice is displayed.

TESTING FOR COLOR FRAME ERRORS

When you are going to make an edit into previously edited material or resume an edit session after an interruption, use the following procedure:

- Make a trial edit.
- Check the phase of the edit while playing through it using a vectorscope or waveform monitor.
- If the phase after the edit point was satisfactory, proceed with editing.
- If the phase of the edit was <u>not</u> satisfactory, change the color frame to the opposite mode as described above. Then make another trial edit. If the burst phase still shifts, look for one or more of the causes described later in "Non CMX Related Color Frame Errors."

SPECIAL NOTES ABOUT COLOR FRAMING

The CMX Color Frame System provides a means of editing videotape without color phase reversals, which can seriously degrade the quality of color recordings.

This system is based on the use of SMPTE Time code as a synthetic color phase reference. When SMPTE time code and color information are recorded continuously on the record tape, alternate frames on the tape have zero degrees and 180 degrees nominal color burst conditions, and also have odd or even time code numbers. The relationship is consistent throughout a particular record tape, though zero degrees may be indicated by either odd or even time code numbers (depending on what relation the time code generator was started to the video on tape when time code was laid down). See Figure 1.

Figure 2 illustrates a proper and an improper phase insert. The thing to remember is that you must have an alternate 0, 180, 0 degrees etc., not 0 to 0, or 180 to 180.

The phase relationship must always go from one phase to the opposite phase. Again, never from same phase to same phase, or a color shift on inserts will result. The color shifts are most noticable when a match-frame edit is performed. However, color shifts may not be noticeable when inserting dissimilar material due to the distraction caused by picture contents. Therefore, only when you insert a matched cut (similar material) will an out-of-phase edit be most noticeable.

CMX SYNTHETIC COLOR FRAMING

The CMX System is not "looking at" video, but it is looking at the master tape's time code and house sync (which all machines and the CMX are slaved to). Here is what happens:

Incoming sync is converted to a 15HZ square wave in the system. This square wave is available to the Supervisor as a Ø or 1 reference phase indicator (according to your input to the computer when it asks "COLOR FRAME (X) ?"). The framecode is checked at the in-edit point where the recording is to start to see if it is odd or even. The house sync phase reference at the start of the synchronize cycle is tested by the computer, which uses it to compute the reference phase at the recording start point.

If the two phase indications are not in the correct relationship, the edit start time is delayed one frame in time (not **time code frame**, but **house sync frame** in video) by slowing all machines. This reverses the computed reference phase. The edit point in terms of time code frame is not changed, so the edit frame-code accuracy is not affected.

Of course, all of the above checks take place nearly instantaneously at the start of the synchronizing process. The synchronizing process is then used to force the right frame number at the right time to obtain a frame-accurate cut with correct color frame.

The playback machines connected to the system are controlled indirectly, since the synchronizing process forces them to be slaved to the Record machine.

Also, the time base correctors of the playbacks force the output phase to match the reference subcarrier (3.58 MHZ).

SOME NON-CMX RELATED COLOR FRAME ERRORS

Although the CMX Color Frame System provides consistent record-tape color framing during an edit session, there are other factors which may produce a real or apparent color phase error not associated with the CMX Color Frame System. They are:

- o Video Phasing
- o Sync timing
- o Editor timing
- o Headwheel servo adjustment
- o Adjustment of proc amps at Record VTR input or playback VTR output
- o Color Frame Switch on VTR not turned OFF. All machines must have their Color Framers turned off.

NOTE: If one or more machines have their Color Framers ON, the system will "fight" the machine during its attempt to lock the machine up to the exact time code frame at the in-edit point. There is a 50-50 chance the machine's Color Framer will choose the same frame you want the CMX to edit on.

- o If the plant sync generator has been turned off at some point in the edit session, the system reference will be lost with respect to the machines.

- Horizontal shifts at a matched cut can be due to an adjustment problem in the playback source. Check the following:

  1. The timebase corrector has possibly drifted. Adjust it and repeat the edit.

  2. With *Colortec, for example, the limit stops may be set too wide. For best results, the stops should be set so that there is only one 0-degree condition and one 180-degree condition. That is, the total range between limit stops should be approximately 360 degrees.

SUMMARY

Operation of the CMX Color Frame System (as seen by the operator) is very simple since you need only make a trial edit, toggle the "COLOR FRAME (X) ?" response (if you see a phase reversal), then resume the edit session. The system will then control the phase so that all future edits in the same session are the same phase as the first edit.

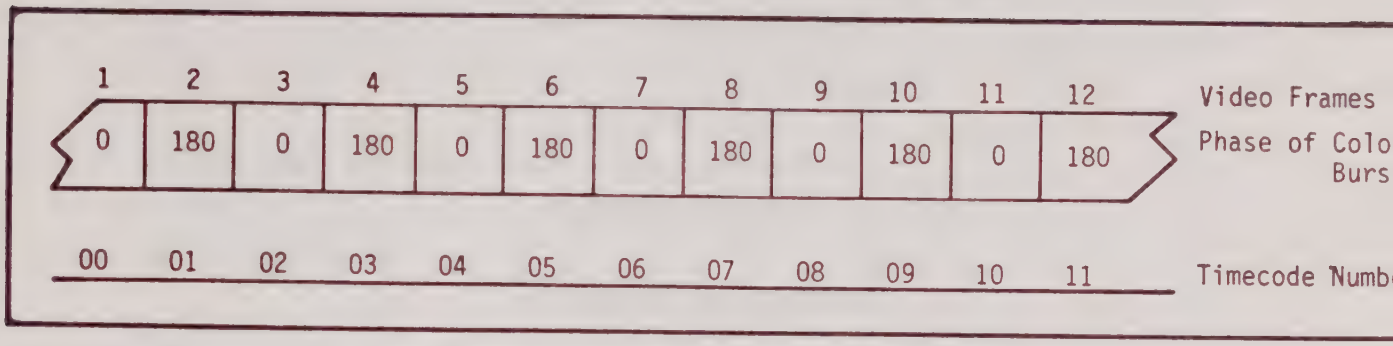
If color phase problems persist, then perhaps one or more of the causes mentioned above can be examined.

Good match-cuts are possible with properly adjusted machines and house system timing.

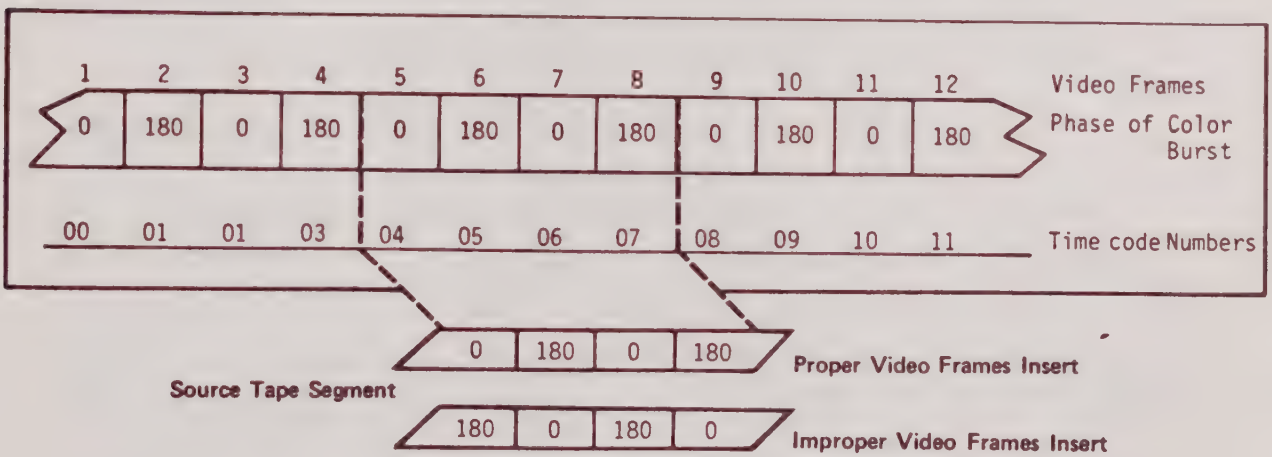
On the following page are two illustrations that may help clarify color framing.

* Ampex Corporation Trademark

COLOR FRAMING EXAMPLES



Example: Time code frame numbers laid down with respect to video phase degrees.


1 2 3 4 5 6 7 8 9 10 11 12
Video Frames
0 180 0 180 0 180 0 180 0 180 0 180
Phase of Color Burst
00 01 01 03 04 05 06 07 08 09 10 11
Time code Numbers
0 180 0 180
Proper Video Frames Insert
Source Tape Segment
180 0 180 0
Improper Video Frames Insert

Example of an insert with proper and improper phase relationship of recorded material to source material

SYSTEM PHASE (Section 4)

WHEN TO USE SECTION 4 :

- o During initial setup
- o Before starting an edit session if video phasing problems are noted

HOW TO USE SECTION 4:

First, select one of the playback machines, AUX or Black as the reference you want to phase to. Place the asterisk next to the selected source.

Press the MAINT key, the number 4 key, and ENTER. The edit screen will display:

SYSTEM REFERENCE = L ?

The system assumes L (Black) at start up. If you want Black as your reference press ENTER. If not, press the N key. The edit screen will display:

SYSTEM REFERENCE =

Select your new reference by pressing the Select key for the A, B, or C-VTR or AUX, then ENTER.

The system will now toggle between the two sources, causing a superimposition of the two vectors on the vectorscope, thus allowing the system to be easily phased. The preview monitor will also show a superimposed image. Be sure that the machine used as a reference has first been phased to the system reference. To exit this mode press ALLSTOP.

NOTE: You may also select Black on the edit screen, then select MAINT SECTION 4. The system will now toggle between crosspoint black and the key fade-to-black.

SET 5 X 1 PRE-SWITCH TIME (Section 5)

WHEN TO USE SECTION 5:

- If you have a Cuts-Only system, use this Section during initial system setup.

- If your system has an effects switcher interface, you will not see this section displayed on the Maintenance Menu. Instead, the message UNUSED WITH EFFECTS SWITCHER will appear.

HOW TO USE SECTION 5

Use Section 5 to choose the amount of time before the edit in-point that is switched to the Cut source from Black. In NTSC, the range allowable for pre-switch time is 30-60 frames. In PAL, it is 25-50 frames.

CAPSTAN OVERRIDE (Section 6)

WHEN TO USE SECTION 6:

- During initial system setup
- During routine maintenance
- When machines fail to lock up properly

HOW TO USE SECTION 6 :

To enter this section, a VTR or ATR must be assigned as an active channel, and the asterisk must be next to the machine to be controlled.

Press the MAINT key, the number 6 key, and ENTER. The edit screen displays:

CONTROL?

Enter one of the following numbers to get the desired override:

1 = -30% override
2 = -20% override
3 = -10% override
4 = 0% override
5 = +10% override
6 = +20% override
7 = +30% override
8 = Normal Play Speed

Press ENTER, and the machine will play at the selected speed.

SPECIAL INFORMATION

The Override commands are very useful to optimize the machines for best lockup times during the synchronizing process. Some Capstan Servos tend to drift slightly, and by stepping through all of the override commands you will be able to spot problems from the servo's behavior. Normally in Ø % override the machine should run at Play or near Play speed. By observing the video monitor, or listening to the audio, you can determine this quickly. If the machine is not running at near Play speed in Ø % override, consult the 330XL Maintenance Manual for adjustments on the CMX system.

Tape Speed Overdrive (TSO) is also a useful post-production device when using a VTR/TBC with variable speed ability - recording on a wild machine. The TSO speeds are exact and will allow exact speed changes, even above or below those possible with the TBC when multi-generations are made.

NOTE: Be sure your machine is adjusted according to manufacturer's specifications BEFORE attempting adjustments on the 330XL system Capstan Control function.

THERE IS NO MAINTENANCE SECTION 7

PAL MAINTENANCE SECTIONS

The following two Maintenance Sections are used when editing on PAL systems.

PAL PAIRING TOGGLED
Section 8 (PAL Systems)

WHEN TO USE SECTION 8:

This section allows you to change the CMX system reference for the 4-field sequence. If you want to edit with a reel that has mis-paired time code, use this section to tell the 330XL to calculate the pairing relationship differently for this reel.

HOW TO USE SECTION 8:

First place the Active Channel indicator (the asterisk) on the machine with the mis-paired time code reel.

Press the MAINT key, the number 8 key and ENTER. The screen will display this message for three seconds:

PAL PAIRING TOGGLED FOR SELECTED VTR

In the Time Code Status section of the Menu, a crosshatch sign (#) will be placed between the playback status message and the time code display. Or, if the crosshatch was already present when the message appeared, the crosshatch will disappear.

The CMX system will continue to calculate in this manner until either the reel number is changed in the Menu, or Maintenance Section 8 is entered again.

COLOUR FRAMING TOGGLED
Section 9 (PAL Systems)

WHEN TO USE SECTION 9:

- Use this section when you want to have an accurate indication of where your edit points are in relation to the 8-field sequence.

- With this section you can change the PAL Pairing indicators that can be displayed in the Menu area from 4-field indication to 8-field indication, or vice versa, for a single VTR.

HOW TO USE SECTION 9:

First, in the Menu Area of the edit screen, place the Active Channel indicator (the asterisk) next to the machine whose Pal Pairing indicators you want to change.

Then press the MAINT key, the number 9 key, and ENTER. The following message will appear for three seconds :

COLOUR FRAMING TOGGLED FOR SELECTED VTR

The PAL Pairing indicator will toggle from 4-field to 8-field, or vice versa. It will remain that way until you change reel numbers or enter Section 9 again.

MANUAL SWITCHER FUNCTIONS
(Sections 10, 11, and 12)

WHEN TO USE THESE SECTIONS :

These functions are only used on 330XL systems with full effects switchers. If your system has a 5 X 1 (cuts-only) switcher, the following message will appear instead:

UNUSED FOR 5 X 1 SWITCHER

The Manual Switcher function can be used during Play and Preview modes and (on some switchers) during Record. The transition and its fade duration displayed in the Menu Area of the edit screen determine the type of fade or wipe that will be performed when using this function.

The Manual Switcher Functions are used mainly in the following ways:

- As a maintenance tool to set up color phase and machine timing
- To pre-set the pattern limits on a wipe

- To set up key clip levels
- To give you manual control over the switcher and enable you to fade from one mix effects bus to the other

HOW TO USE THESE SECTIONS :

Press the MAINT key and the number key(s) for the section(s) you want (10, 11, or 12). Each is a toggle function, so each time you access a section, you alternately enable it or disable it. Each function operates as follows :

FADE TO FROM- SOURCE

Causes the switcher to fade from the To- source to the From- source.

FADE TO TO - SOURCE

Causes the switcher to fade from the From- source to the To-source.

FADE 50%

Performs a half-lap between the two mix effects buses.

NOTE: 50% is non-operational on some serially-controlled effects switchers.

TIME CODE/ TIMER
(Section 13)

WHEN TO USE THIS SECTION

This function is operable **only** with the CMX Superkit. It will **not** operate with the standard or Multi-I^2s.

This section is used when time code is incorrect or when time code is not on the tape. In these cases you can select the tape timer to use straight time when editing.

NOTE: If the tape timer feature is used, frame accuracy may be lost.

HOW TO USE THIS SECTION

Press the MAINT key, the number 13, and ENTER. The system will prompt for each Superkit VTR, asking you to choose time code or tape timer as VTR output. For example, after you have entered this section the screen will display:

R-VTR (003,001) = Timer

Press "Y" or ENTER to accept, or press "N" to toggle to Time Code.

EDIT TOLERANCE
(Section 14)

WHEN TO USE THIS SECTION

This section is used only on 330XL systems with the CMX Superkit.

Although the 330XL normally functions as a frame accurate time code editor, this section allows you to set frame accuracy to tolerate a plus or minus one frame error if you are using a tape with bad time code. With edit tolerance set to "on," the VTR will be allowed to lock and edit even though it might not be synchronized on the exact frame. Note that frame accuracy may be affected when you use this feature.

HOW TO USE THIS SECTION

Press the MAINT key, number 14, and ENTER. The system will prompt:

EDIT TOLERANCE = 0

This is the system default and it will not allow edit tolerance. To leave the system set to frame accurate editing, press ENTER. To select the edit tolerance function, press "N". The screen will display:

EDIT TOLERANCE = 1

Press ENTER. The system will now go through all Superkit VTR's.

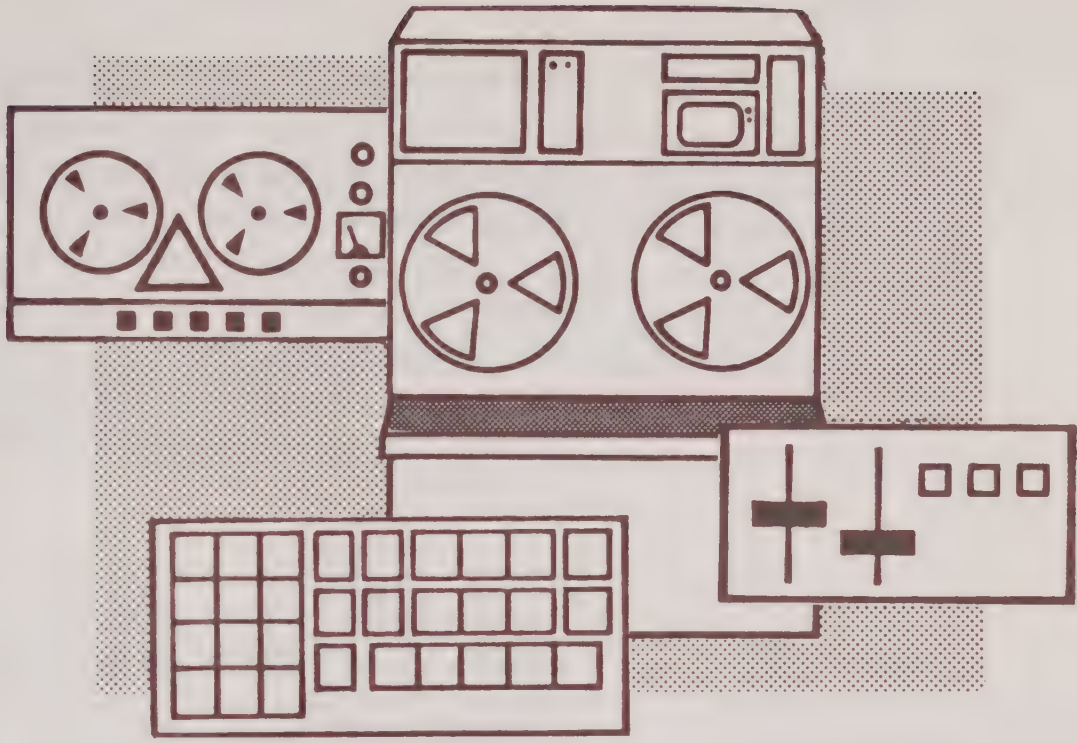
330XL SYSTEM ERROR MESSAGES

MESSAGE	PROBABLE CAUSE	USUAL CORRECTION
L-O-S (Loss of Signal)	Communication lost between supervisor and the I^2 connected to the indicated channel.	On single I^2 front panel, make sure the green light is on. If not, turn COM switch off and on. On multi-I^2, press Restart button. Then re-initialize Channel Assignments. Check communication cable.
DEFINE OUT-POINT	No edit duration specified during Re-edit mode or Record Off mode. Also occurs when transition or FROM source duration is greater than Record duration.	Set up edit properly.
ESR (ERROR IN SEARCHING)	No time code or poor quality time code on the tape.	The system will try to make the edit on the second or third attempt. If it fails, the time code must be recorded.
ESY (ERROR IN SYNCHRON-IZING)	The system did not achieve frame synchronization; therefore, the edit would not be frame accurate. This may be caused by the tape being parked inaccurately.	Subsequent attempts should park the tape more accurately. Check for asynchronous timecode. Check Capstan Override.
ECL (COMPUTER CLOCK ERROR)	This error is caused by a poor reference signal (sync reference) which causes improper or insufficient data to be processed by the computer.	Check sync input to I^2 in question.
EHL (ERROR IN H-LOCK)	Indicates VTR did not achieve horizontal lock or H-lock. The horizontal signal was not stabilized prior to edit point. Although many helicals are Vertical-Lock machines, if the timecode is outside of the window, an EHL message will appear.	Subsequent attempts should permit the editor to achieve H-lock. Otherwise, check VTR for proper performance and set up.
*****LOSS OF SYNC*****	Indicates a loss of sync to the system. This error signal is accompanied by one "chirp" per second audible alarm.	Audible alarm is cleared by restoration of system sync. System operation must be restored by re-initializing the system. Check Color Framing after a Sync loss.

SECTION 16

HIGH SPEED READER/PUNCH OPTION

A High Speed Papertape Reader/Punch can be added to the 330XL system as an option. It is used to punch out a transportable copy of a CMX Edit Decision List for storage or later use. The High Speed Reader Punch can also be used to load an EDL from papertape into the memory of the Central Controller so that you can make modifications or additions to your show. Operating instructions for your High Speed Reader/Punch are included with the device by the original equipment manufacturer.



SECTION 17 OVERVIEW

GENERAL PURPOSE INTERFACE (GPI)

The General Purpose Interface, or GPI, is a system option that provides CMX control of teleproduction devices such as audio "cart" machines, digital video effects generators, or telecines. With the GPI option, up to eight of these devices can be started and stopped at selected time code locations on the Record VTR tape.

GPI HARDWARE

If you have a system with single I^2s, the GPI is enclosed in a chassis that is similar to an I^2 and is connected to the Central Controller. If you have a multi-I^2 system, the GPI resides on a special board inside the multi-I^2.

The GPI hardware consists of eight relays. These relays are controlled by the GPI software, which is part of the 330XL Operating Program. Each device that is to be controlled by the GPI is connected to one of these relays. Each relay in turn operates as a remote switch to turn the controlled devices on and off. The relay can be programmed to function either as a simple on/off switch to control devices such as a telecine, or as a momentary switch for devices such as a slide chain.

When you use the GPI you must define the parameters for the commands that activate each relay, including the pulse length for relays programmed as momentary switches. You must also define the time code location(s) where the relays are to be activated. This time code location is called the trigger point. The trigger point may be expressed as either an absolute R-VTR time code value or as a value relative to the Record In or Out-time of the edit displayed in the menu area.

The GPI edit information is stored in its own special place in memory. If you are creating your EDL with DISK ON and/or PUNCH ON, no GPI information will be stored on floppy disk or punched on tape. To store your complete edit information, including the GPI, you must accomplish this at the end of an edit session by using the Disk Save function or the Papertape Save function (see Section 13, Edit Data Access).

Look at the figure on the facing page for an example of a printout of an EDL with GPI events. Also, on Page 17-4 there is an example of an EDL with GPI triggers as it would appear on the 330XL edit screen.

Up to 16 trigger points, using a combination of relays, may be set for each edit. When the EDL is printed, the trigger points associated with each edit will also be printed. In the Auto-assembly mode, the GPI relays will be triggered automatically at the selected time for the specified device.

```
TITLE: GPI EDL PRINTOUT EXAMPLE
FCM: NON-DROP FRAME

001    BL  B      C          00:00:00:00 00:00:00:00 01:00:00:00 01:00:00:00
001   001  B      D      030 15:00:00:00 15:00:10:00 01:00:00:00 01:00:10:00
GPI   SLIDE1     PULSE      001     RI    +00:00:00:10
GPI   TLCINE     ON         001     RI    +00:00:02:00
GPI   TLCINE     OFF        001     RI    +00:00:06:00

002   002  B      C          15:00:10:00 15:00:20:00 01:00:10:00 01:00:20:00
GPI   CHRGEN     PULSE      002     A      01:00:10:00
GPI   CHRGEN     PULSE      002     RI    +00:00:02:00

003   003  B      C          15:00:20:00 15:00:30:00 01:00:20:00 01:00:30:00

004   004  B      C          15:00:30:00 15:00:40:00 01:00:30:00 01:00:40:00

005   005  B      C          15:00:40:00 15:00:50:00 01:00:40:00 01:00:50:00

006   006  B      C          15:00:50:00 15:01:00:00 01:00:50:00 01:01:00:00
```

EDIT SCREEN DISPLAY FOR EDL WITH GPI TRIGGERS

```
V                          IN           OUT          DURATION          TIME-CODE
                                                     00:06:58:17
                 R-VTR     01:06:23:11                                 /PLA N-01:17:06:05
DISSOLVE
C TO A  060 *    A-077     12:10:37:20  12:10:44:04  00:00:06:14       /CUE N-12:10:34:00
                 B-081     12:35:18:28  12:35:18:28                    /STP N-12:35:19:08
                 C-084     12:39:18:24  12:39:18:24                    /LOS D-12:42:06:20
SORT REC-IN      AUX                                                    REC OFF DISK ON
EVENT #020       BLK
A MODE ASSEMBLY, EVENTS:

014  084  B      C          12:39:13:20  12:39:18:24  01:06:18:07  01:06:23:11
015  081  B      C          12:35:01:06  12:35:18:28  01:06:23:11  01:06:41:03
GPI TRIGGERS 005
016  084  V      C          12:39:18:24  12:39:18:24  01:06:23:11  01:06:23:11
016  077  V      C     060  13:10:37:20  13:10:44:04  01:06:23:11  01:06:29:25
017  077  V      C          13:26:17:02  13:26:22:02  01:06:29:25  01:06:34:25
017  084  V      W019 045   12:35:04:03  12:35:10:11  01:05:34:25  01:06:41:03
018  081  B      C          12:37:08:02  12:37:11:02  01:06:41:03  01:06:44:03
018  081  B      K B        12:37:11:02  12:37:18:23  01:05:44:03  01:06:51:24
018   AX  B      K     030  00:00:00:00  00:00:06:21  01:06:44:03  01:06:50:24
019  077  B      K B  (F)   12:19:37:19  12:19:44:12  01:06:51:24  01:06:58:17
019  084  B      K Q  090   12:53:00:19  12:53:04:12  01:06:51:24  01:06:55:17
```

GPI INITIALIZATION

Before using the GPI option, you need to set the operating parameters of each of the GPI relays.

The active relays must be given names. Also, you must tell the system whether the connected device is activated by a single pulse or by a continuous command to keep it on or off. For example, if you want an audio "cart" machine to be controlled by Relay 1 (the default name), you might name the relay "ACART1". You would program the relay to output a single control pulse. You would also define the length of this pulse (in frames) at this point.

To set the relay parameters, you access Initialization Sections 15 and 16.

GPI RELAY NAMES
Initialization Section 15

Access this function by the pressing the white INIT key, the number keys 1 and 5, and ENTER. The Message Area of the screen will display:

GPI RELAY #001 (RELAY1)=

NOTE: RELAY1 is a default name. If RELAY1 has been previously renamed, that new name will appear instead.

Enter a new name of 6 or less characters (numerals or letters, no spaces) to represent the device to be controlled by the relay.

After you enter the name, the next relay's number and name is displayed. If you choose not to rename the relay, or the relay is not used, press the ENTER key.

Once a GPI relay has been named, the system will be able to correctly assign GPI commands to the specific peripheral device.

GPI RELAY MODE
Initialization Section 16

Access Initialization Section 16 by pressing INIT, the number keys for 16, and ENTER. The Message Area of the edit screen will display:

GPI RELAY #001 (RELAY1) PULSE MODE?

NOTE: RELAY1 is a default name. If RELAY1 was previously renamed, that name will appear instead. PULSE is the default mode. If the mode was previously chaned to ON/OFF, that mode will be indicated instead.

If the device assigned to the relay is pulse-activated, press the ENTER key. The following message will then appear:

GPI PULSE DURATION 003

The number 003 is the default duration in frames. Most devices connected to your GPI will be triggered by a pulse duration of three video frames. Some video devices such as character generators or digital effects generators require a pulse of only one frame.

To change the duration, enter a new value (in frames) and press ENTER. To retain the default value (or previously entered value), press only the ENTER key. The system will prompt you with similar dialogue for the mode of the next relay.

If the device connected to the relay must be turned On and Off, answer No to the PULSE MODE question. The System Message area will then display:

GPI RELAY #001 (RELAY 1) ON/OFF?

Press the ENTER key to set this relay in the ON/OFF mode. To toggle back to the PULSE MODE question, press the N key.

Once a GPI relay has been named, the system will be able to correctly assign GPI commands to the specific peripheral device.

THE GPI DISPLAYS

When setting GPI relay trigger points, two special displays are used : the Relay Menu and the Trigger List.

The Relay Menu displays the parameters for each relay. From this menu, GPI relays are assigned and programmed.

The Trigger List displays the trigger points that have been entered for a selected relay. You work from the Trigger List to set new trigger points.

THE RELAY MENU

To access the Relay Menu for the displayed edit, press the GPI key. The Relay Menu will appear in the position normally occupied by the EDL. It is comprised of the following information:

1. The event number of the edit
2. A list of the eight GPI relays
3. The Pulse or On/Off status of each relay
4. The Pulse duration (in frames)
5. The total number of trigger points defined for the EDL event and for each relay
6. The total number of inhibited trigger points defined for the EDL event and for each relay. (Inhibited trigger points are indicated by an asterisk.)

An example of a Relay Menu appears below.

```
GPI  RELAY  CONFIGURATION  FOR  EVENT  #005      TOTAL TRIGGERS 010/002*

             ACART1     PULSE     001     TRIGGERS - 003
             ATR1       ON/OFF            TRIGGERS - 002
             SLIDE      PULSE     001     TRIGGERS - 003/002*
             TLCINE     ON/OFF            TRIGGERS - 002
             RELAY5     PULSE     003     TRIGGERS - 000
             RELAY6     PULSE     003     TRIGGERS - 000
             RELAY7     PULSE     003     TRIGGERS - 000
             RELAY8     PULSE     003     TRIGGERS - 000
```

RELAY MENU

THE TRIGGER LIST

To set trigger points for a relay on the Relay Menu, you must first access the appropriate Trigger List. To do this, you can scroll through the Relay Menu to highlight the desired relay, and then press > EVNT. Or, to access the Trigger List directly, press the number key that corresponds to that trigger on the Relay Menu. In this way, you can go directly from one Trigger List to another just by pressing number keys, instead of scrolling and highlighting. In either case, the Relay Menu will disappear from the screen and be replaced by the selected Trigger List. To return to the Relay Menu, press the GPI key again.

The figures below are examples of the Trigger Lists for two of the highlighted relays (Slide and Telecine) on the sample Relay Menu.

```
GPI  CONFIGURATION  FOR  EDL  EVENT  #005   TOTAL TRIGGERS 010/002*
        SLIDE       PULSE      001    TRIGGERS - 003/002*

          1   PULSE    RI    +00:00:00:05*
          2   PULSE    RO    -00:00:00:10*
          3   PULSE    RI    +00:00:01:05
          4
```

TRIGGER LIST A

```
GPI  CONFIGURATION  FOR  EDL  EVENT  #005   TOTAL TRIGGERS 010/002*
        TLCINE      ON/OFF          TRIGGERS - 002

          1   ON       A      10:15:05:00
          2   OFF      A      10:20:00:00
          3
```

TRIGGER LIST B

A Trigger List is comprised of the following information:

1. The EDL event number

2. The relay name for which the trigger points are being set

3. The Pulse or On/Off status of the relay

4. The total number of trigger points defined for the edit and the relay

5. The total number of inhibited trigger points defined for the edit (indicated by an asterisk)

6. A list of any previously set trigger points, followed by a prompt (the trigger-point number) to enter the next trigger point. As each trigger is defined, the list increases in size up to a maximum of 16 trigger points.

   The list contains the following information:

   A. The number of the trigger point (1 - 16)

   B. The Pulse or On/Off status of the relay

   C. Either the Pulse duration (in frames) or an indication of whether the command is an On or an Off

   D. The type of time reference used for the trigger point. The three types of time references are:

- An actual absolute time code value, identified by an "A"
- A time value relative to the Record In time, identified by "RI", either + or -
- A time value relative to the Record Out time, identified by "RO", either + or -

E. The trigger point, expressed as a time code value. If the trigger point is inhibited, an asterisk will appear next to the value.

GPI KEYS AND FUNCTIONS

Following is a list of the keys that are commonly used as part of the GPI option. Many of these keys are used in other system operations. When used for GPI, however, the specific function of each key may differ. Detailed instructions follow later in this section.

GPI

The GPI key is a gray key in the top row of the Main Keyboard. When you press the GPI key, the GPI hardware is automatically activated, and the EDL area of the edit screen is replaced by the Relay Menu. To exit the Relay Menu and return to the EDL display, press the GPI key again. See "GPI Activation" for more details.

SCROLL UP, SCROLL DOWN

The fastest way to access a desired Trigger List is to simply press the number key corresponding to that trigger. However, you may also scroll up or down the Relay Menu to highlight the desired relay, then press the EVNT key. Once in the Trigger List, you use the SCROLL keys to access individual trigger points.

SET IN, SET OUT

When a GPI relay has been programmed for the Pulse Mode, these keys are used to set in trigger points.

In the On/Off mode, the SET IN key is used to enter the ON command time.

Detailed instructions follow in "Setting GPI Trigger Points" later in this section

MKIN, MKOUT

These keys are used to enter trigger points when a machine is in the Record, Replay, or Preview modes. You use these keys for "on-the-fly" marking of trigger points.

When a GPI relay is programmmed for Pulse mode, press either MKIN or MKOUT to enter trigger points.

In the ON/OFF mode, press MKIN to enter the ON command time, and press MKOUT to enter the OFF command time.

TRIM IN, TRIM OUT

These keys are used to trim trigger point values that are stored in the Trigger List. In the GPI mode, either key performs the same function, since there is only one time code value displayed for each trigger. See "Trimming A Trigger Point," later in this section, for details.

RECALL

The GPI marks for an EDL event are stored in the computer's Menu Storage buffer in the same manner as other marks for that event.

In normal (non-GPI) operations, you can press the RECALL key to recover not only an EDL event's marks, but its GPI marks as well.

When the GPI List is displayed, pressing the RECALL key will cause the following prompt to appear on the screen:

RECALL GPI MARKS FROM EVENT#

Enter the number of the EDL event for which you want the GPI marks. The Relay Menu for that event will then be displayed.

THE GPI MENU

Four of the GPI functions are accessed through the GPI key. Press SHIFT/GPI, and the following menu will appear on the screen:

GPI SECTION :

1) GPI ON/OFF.
2) DELETE.
3) ENABLE.
4) DISABLE.

First, Section 1 (GPI ON/OFF) will be discussed, followed by an explanation of setting, trimming, and re-editing trigger points. Then the Delete, Enable, and Disable functions will be covered.

GPI ACTIVATION

UNCTION DESCRIPTION

In order for any of the GPI software commands to occur in an Auto-assembly, the GPI hardware must be activated. The system does this automatically when you press the GPI key. Whenever the GPI hardware is active, the following message appears just below the R-VTR In and Out-times:

GPI-000

The number 000 is a default value. In actual operation, 000 would be the number of trigger points that are set for the edit displayed in the Menu. It could be anywhere from 001 to 016.

EYBOARD INSTRUCTIONS

If you want to temporarily deactivate the GPI hardware, press the SHIFT/GPI, then the number 1 key while the Relay List is displayed. You might do this, for example, if you want to Preview an event

without activating the GPI-controlled devices. Existing relay parameters and trigger points are not affected. You can still set new trigger points if desired. When the GPI hardware is deactivated, however, the relay software commands cannot occur.

When you are ready to reactivate the GPI hardware, you can either :

1) If the Relay List is still displayed, press the SHIFT/GPI and number 1 key again.

2) If the EDL is displayed, press the GPI key. The hardware will automatically be reactivated.

SETTING GPI TRIGGER POINTS

Each EDL event can have a maximum of 16 trigger points defined for it. Also, an individual relay can have up to 16 trigger points. The number of trigger points that can be set for a relay depends upon how many trigger points are already defined for the edit. For example, if Relay 1 has three trigger points, and Relay 2 has three trigger points, then no more than ten trigger points can be set for any other relay (since the total can be no more than 16).

To set a trigger point, you must first access the marks for the desired EDL event. To do so :

1. Create an EDL event. Although the event is not yet listed in the EDL, you can set trigger points for the marks in the Edit Menu. Or,

2. Re-edit an existing EDL event.

When the marks for the selected EDL event are displayed on the Edit Menu, press the GPI key. The Relay Menu will appear in the position normally occupied by the EDL.

Next, press the number key corresponding to the desired trigger, to access the Trigger List. (Or you can scroll to that trigger and press ➤ EVNT.) If trigger points have been previously set for that relay, the Trigger List will be displayed first, followed by a prompt to define the next trigger point. If no trigger points have been set, just the prompt will be displayed so that you can start entering trigger points. Scroll through the list to highlight a previously set trigger point or to highlight the prompt.

Once a trigger point or the prompt has been highlighted, use the SET IN or SET OUT keys to define the new trigger point.

If the relay has been programmed to operate in the Pulse Mode, pressing either the SET IN or SET OUT key will result in the following message:

SET PULSE

If the relay has been programmed for the On/Off mode, pressing the SET IN key will result in the following message:

SET ON

Pressing the SET OUT key will result in the following message:

SET OFF

There are three acceptable time code values that can be entered in response to SET PULSE, SET ON, and SET OFF messages:

1) The absolute value of an R-VTR time; for example, 1:00:12:15, R IN or R OUT.

2) The R-VTR In time or Out time, plus or minus a value in frames or frames and seconds; for example, R IN + 003. (Values above 29 frames must be entered as a complete time code number.)

3) The R-VTR In- or Out-time, plus or minus a source machine's duration; for example, R IN + B DURATION.

If you enter a time code value equal to the In or Out time plus or minus a value, the trigger point will automatically track any changes made to those edit points when you are using the list management functions.

TRIMMING A TRIGGER POINT

You can use either the TRIM IN key or the TRIM OUT key to trim a trigger point for any given relay. In the GPI mode, the system does not distinguish a difference between the two keys, since there is only

one time code value.

To change a previously set trigger point, use the following procedure :

1. Access the Trigger List for the desired relay.

2. Use the SCROLL UP or SCROLL DOWN key to highlight the trigger point to be trimmed. If a prompt is highlighted, the system will automatically scroll to the last trigger point in the list when you press one of the TRIM keys. After the trim is completed, the system will automatically scroll back to the prompt.

3. Once the desired EDL event is highlighted, press either the TRIM IN key or the TRIM OUT key. The system message area will display:

   TRIM

4. Enter the desired trim value, including a minus sign (-) if you want to subtract a time value from the trigger point. Use of the plus sign (+) is not allowed when entering a positive value. Press the ENTER key, and the trigger point will be adjusted accordingly.

RE-EDITING TRIGGER POINTS

Trigger Points can be re-edited in two ways : (1) in conjunction with re-editing an EDL event and (2) individually, without affecting the EDL event.
To re-edit a trigger point while re-editing an EDL event, use the following procedure:

1) Display the List Management Menu, and select OPEN RE-EDIT. Make any necessary changes to the edit times of the selected EDL event.

2) Press the GPI key. The Relay Menu for that EDL event will appear.

3) Access the Trigger screen for the desired relay and make any necessary changes to the trigger points.

4) Insert the changed event back into the list by using the Insert Re-Edit function. Any changes to the EDL event and the related trigger point(s) will now become part of the EDL.

If a Relay Menu for one EDL event is displayed and you find it necessary to re-edit one or more trigger points associated with another EDL event, use the following procedure:

1) Access the OPEN RE-EDIT function. The following prompt will appear on the screen :

   RE-EDIT THE GPI TRIGGERS FROM EVENT #

2) Enter the the EDL event number whose trigger points are to be re-edited. After you press ENTER, the Relay Menu for that EDL event will appear.

3) Modify the desired trigger points.

4) Use the INSERT RE-EDIT function to integrate the changes into the EDL. The original Relay Menu will then reappear.

DELETING TRIGGER POINTS

While in the GPI mode, individual trigger points, all of the trigger points set for a selected relay, or all of the trigger points associated with an EDL event may be deleted.

To delete an individual trigger point:

1) Highlight the trigger point on the Trigger List.

2) Press the SHIFT/GPI keys, to display the GPI Menu; then press the number 2 key and ENTER. The trigger point will be deleted from the list, and the system will display :

TRIGGER POINT DELETED

To delete all trigger points for a relay:

1) Highlight the relay on the Relay Menu.

2) Display the GPI Menu; press the 2 key/ENTER. The following message will appear :

DELETE GPI TRIGGERS FOR RELAY1?

3) Press Y to delete all of the trigger points for that relay.

NOTE: **RELAY1 is the default name. The assigned name of the relay will actually appear.**

To delete all of the trigger points associated with a particular EDL event, use the following procedure :

1) Access any relay for the EDL event.

2) Press the SHIFT/GPI, number 2, and ENTER. The system message will display:

DELETE GPI TRIGGERS FOR RELAY1 ?

3) Enter A for ALL. When you press ENTER, the following prompt will appear :

DELETE ALL GPI TRIGGERS FOR EVENT # XXX

4. Press the Y key to delete all trigger points.

ENABLING/DISABLING TRIGGER POINTS

You can inhibit an individual trigger point or all the trigger points for a GPI relay so that the command(s) to activate the relay(s) will not occur. The Trigger List will still display the trigger points, but it will also indicate (with an asterisk) which trigger points are inhibited.

To inhibit a specific trigger point:

1) Highlight the trigger point on the Trigger List.

2) Press SHIFT/GPI, the number 4 key (for Disable) and ENTER. An asterisk will appear next to the trigger point. Also, the total number of inhibited trigger points (with an asterisk) will appear next to the total number of defined trigger points for the associated EDL event.

To inhibit all of the trigger points for a relay:

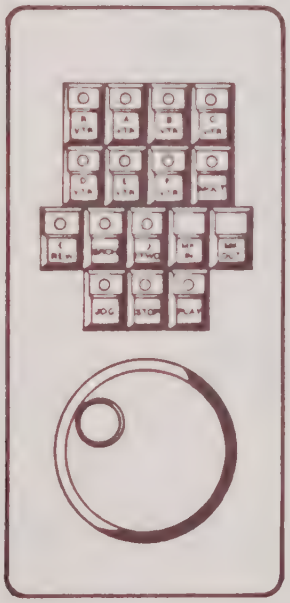
1) Highlight that relay on the Relay Menu.

2) Press SHIFT/GPI, and select DISABLE. A number indicating the amount of inhibited trigger points (with an asterisk) will appear next to the number of total trigger points set for that relay. Also, the total number of inhibited trigger points for that EDL event will appear next to the total number of defined trigger points for that event.

To enable a previously inhibited trigger points or number of trigger points, repeat the procedures just described, but instead access the ENABLE function (number 3 on the GPI Menu screen).

GISMO OPTION

SECTION 18 OVERVIEW



The GISMO option comes in the form of a separate control head that can be hand held and operates remotely to the 330XL keyboard. "GISMO" means "Ganged/Individual Speed/ Motion Option."

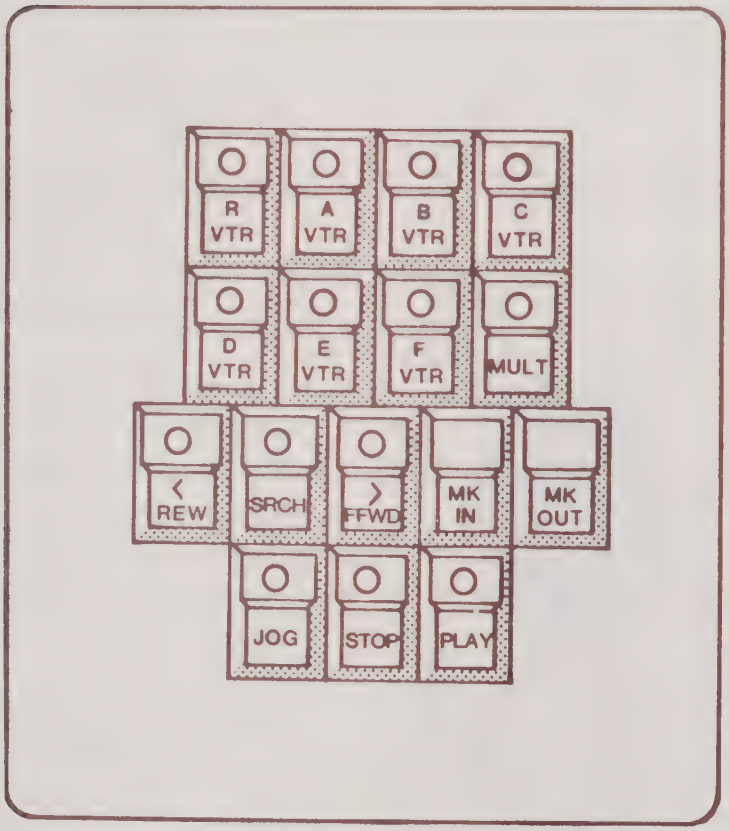
The GISMO allows you to exercise the automatic machine control functions of the keyboard. You can jog forward or backward through a scene from Ø to approximately 1.2 X Play speed, or search visually through program material at speeds from Ø to 25 X Play speed. Both single and multiple machine control is provided. Speeds available are machine dependent.

NOTE: Search and Jog features are operable only with VTRs that have Search and Jog capabilities.

The keyboard and GISMO cannot control the same machine at the same time. The system is designed to give the keyboard priority. If you press ALLSTOP on the keyboard, the machine(s) being operated by the GISMO are de-selected, and control is turned over to the keyboard. "Same-time" operation of separate machines can be performed.

If you want a preliminary look at certain program material, you will find the Search mode a great convenience. After visually selecting a program element, you can take advantage of the Jog mode to precisely choose and Mark In or Mark Out the final edit point.

The GISMO also permits a director or client to review program materials and select edit points remotely, freeing the editor for the more creative aspects of the editing effort.



GISMO CONTROLS

The controls provided on the GISMO panel consist of sixteen push-buttons and a motion knob. The push-buttons are:

- Seven green VTR selection keys. Four of these keys are used to select control of the R-VTR, A-VTR, B-VTR, and C-VTR.

- One grey key that is used to define the Multiple-Machine control mode.

- Six blue keys that select the machine operating modes. The modes available are REW (Rewind), SRCH (Search), FFWD (Fast Forward), JOG, STOP, and PLAY.

- Two yellow keys for Marks -- one for MK IN (Mark In), and one for MK OUT (Mark Out).

- A single control knob is used for Search speed or direction when operating in the SRCH mode or Jog forward and Jog backward when in the Jog mode.

- A REM (Remote) status appears in the Menu Time Code area of the screen for the machines under GISMO control. A direction and relative speed indicator also is displayed when using the GISMO Search mode.

SINGLE MACHINE CONTROL

All basic automatic machine control functions are similar to those on the 330XL keyboard. For example, to place the A-VTR into Play, press the A-VTR key and then the PLAY key. To stop the A-VTR, press the STOP key.

The Jog feature is different from the Jog control provided by the 330XL keyboard. To operate in the Jog mode, first select the desired VTR and then press the JOG key. The machine will now advance as the GISMO knob is rotated in a clockwise direction, and will move in Reverse direction as the knob is rotated counter-clockwise. The range of Jog speeds is from Ø to approximately 1.2 X Play speed.

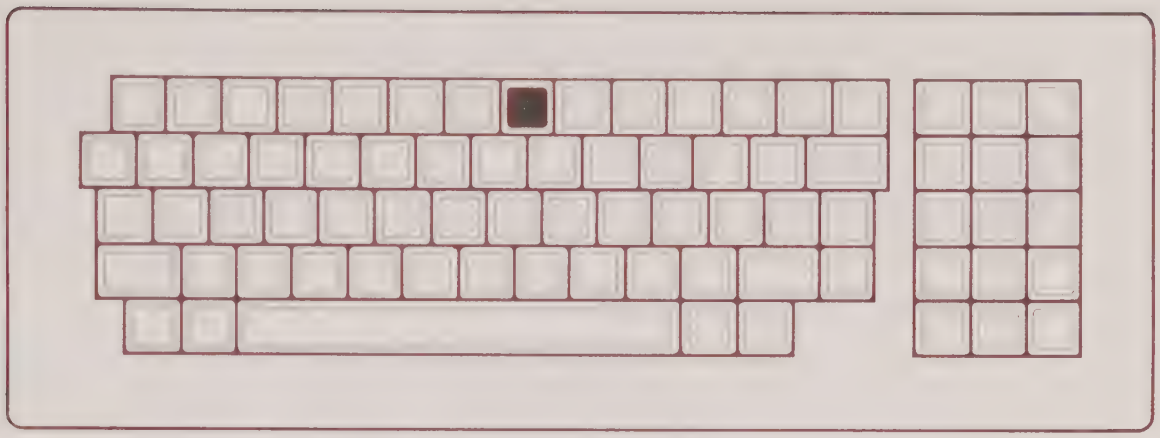
MULTIPLE MACHINE CONTROL

Any available combination of machines can be controlled at the same time. Any machine that is not under keyboard control can be placed under GISMO control.

To place playback machines under Multiple Machine Control, first press the MULTI key, then sequentially press the chosen VTR keys. Then, if you want to control the A and C- VTRs , press the A-VTR and C-VTR keys, followed by the mode of operation desired, such as PLAY, SRCH, or JOG. All machines will go into the selected function at the same time.

While in the Multiple Machine Control mode, any individual machine can be stopped (de-selected) by pressing the VTR key for that machine a second time.

If the MULTI key is pressed a second time, all VTRs will be de-selected and Multiple Machine Control will be disabled.



SECTION 19 OVERVIEW

SWITCHER MEMORY

The Switcher Memory program allows the 330XL to automatically activate the effects memory registers of certain (serially controlled) video switchers during Preview, Record and Auto-Assembly. The memory registers, which must be pre-programmed, are triggered by the 330XL at specific time code locations.

In this section, we will discuss the Switcher Memory functions in the following order:

1) Trigger Points
2) Activating Switcher Memory
3) Switcher Memory Event Display
4) Operating Switcher Memory
5) Printing and Storing Switcher Memory Events

TRIGGER POINTS

When using Switcher Memory, you must define the time code location on the Record tape where each register is to be activated. This time code location is

called the trigger point. The trigger point may be expressed as either an absolute R-VTR time code value or as a value relative to the Record In or Record Out-time of the edit displayed in the Menu area. This information is integrated into the Edit Decision List.

You can set up to 16 register triggers for each edit. When the EDL is printed, the trigger points associated with each edit will also be printed. In the Auto-assembly mode, the effects memory registers will be triggered automatically at the selected time. In the Re-Edit mode, the Switcher Memory trigger information may be re-edited also.

ACCESSING SWITCHER MEMORY

To access the Switcher Memory function, press the SW-MEM key. On the left side of the Menu area of the screen the following message will appear :

SW-MEM ON

Whenever you see this message on the screen (even if the Switcher Memory Event List is not displayed), you can access the Switcher Memory function.

When the Switcher Memory triggers and Disk Save or Papertape Save functions are being used, most of the normal keyboard functions are disabled.

To turn the Switcher Memory function off, press the SW-MEM key again.

SW-MEM EVENT DISPLAY

When SW-MEM is ON, press the DISP (Display) key to display the SW-MEM Event List. The system prompts:

OUTPUT SW-MEM REGISTER EVENTS

You can enter any of the following responses :

1. The number of a single event

2. A range of events by tvping the first event desired followed by a comma and then the last event desired.

3. A or zero to indicate all events.

An Event List display with three triggers would look like the boxed example below (the title of each column does not appear on the screen) :

SW-MEM Event #	Bank	Register	EDL Event #	Time Type	Activation Time
001	B001	R001	006	RI	00:00:00:05
002	B001	R002	015	RI	00:00:00:10
003	B001	R003	025	A	00:06:30:15

The meanings of the entries are as follows :

SW-MEM Event : A sequential number from 1-999 assigned to SW-MEM events as they are entered, regardless of the EDL event number.

Bank : The bus assignment of the E-MEM switcher.

Register : A number from 1-22 showing which register in the bank is being activated. For GVG switchers, select registers 12-22 by pressing SHIFT 1-11, (for example, SHIFT 2 indicates register 13.)

EDL Event # : The edit that triggers the SW-MEM event.

Time Type : "A" refers to a trigger time that is an absolute time code location on the master tape. The register will be triggered when the R-VTR reaches the specific time code location.

"RI" refers to an activation time that is relative to the Record In time. The event will be triggered when the R-VTR reaches the Record-in time plus and minus the offset time.

"RO" refers to an activation time that is relative to the Record Out time, plus or minus the offset time.

Activation time : A SMPTE time code number which is either an absolute ("A") time type or an offset to a Record In ("RI") or Record Out ("RO") time.

To exit the Switcher Memory Event List and return to the EDL display, press the SW-MEM key again.

OPERATING SWITCHER MEMORY

When Switcher Memory is ON, you may:

1) Enter trigger times for registers to be activated.
2) Alter times on previously selected triggers.
3) Delete selected Switcher Memory triggers.

4) Enable the SW-MEM ACTIVE mode so that Switcher Memory events can be carried out.

5) Assign a Switcher Memory event to an EDL edit other than the current edit.

These five Switcher Memory functions will be explained below.

NOTE: The 330XL will associate SW-MEM triggers with the current edit event unless you are using the Event Association function, which is explained later in this section.

CREATING SWITCHER MEMORY EVENTS

To create a Switcher Memory event, first be sure the "SW MEM ON" message is displayed. Press the REC key. The Message Area of the screen displays:

SW-MEM BANK

Bank refers to the E-MEM bank of registers. For example, on your switcher, E-MEM bank one may belong to Mix/Effect bus one; bank two to M/E bus two, etc.). Enter the E-MEM bank number containing the registers to be triggered. The screen prompts :

SW-MEM REGISTER

Type in the number of the register from the associated bank desired, followed by ENTER. The screen then displays :

ACTIVATION TIME

Enter the R-VTR time code address where the event

will be triggered. Times can be entered in a variety of ways:

1. As an absolute time code entry, e.g. 1:24:12:20.

2. The Record In or Out time by pressing the R-VTR key and then SET IN or SET OUT followed by ENTER.

3. As a time relative to the Record In/Out time by entering R-VTR, SET IN, or SET OUT followed by plus or minus the offset value. For example, R-VTR SET OUT - 2:00, or R-VTR SET IN +15.

4. As an absolute time code value from any playback source location, e.g. A-VTR SET IN. Remember though, that the R-VTR time code is the reference for SW-MEM triggers, regardless of what location the event's time code came from.

The system will then display:

EVENT ENTERED

The trigger times allowed for an edit may be any R-VTR time code location from minus 29 frames (minus 24 frames in PAL) before the edit In-point up to the edit Out-point. If a SW-MEM trigger is timed to occur at the edit In-point, it may be helpful to have the event timed to occur slightly before the Master In-time in order to compensate for any switcher lag time and to avoid editing into a set-up transition. Any or all registers may be triggered at a single point, but the switcher may not be able to perform all events simultaneously. For example, two dissolves

cannot be performed at one time.

You can also enter trigger points on-the-fly when the R-VTR is in the Record, Replay, or Preview modes. Press either MARK IN or MARK OUT to enter trigger points.

When the trigger points are marked, the last bank and register numbers that you selected will be assumed.

ALTERING TRIGGER TIMES

Use the TRIM IN key to trim previously set trigger point values in the Switcher Memory List. When you press TRIM IN, the screen will display:

TRIM SW-MEM EVENT # :

Enter the desired SW-MEM event number. The screen will display:

TRIM VALUE :

Enter the desired trim value, including a minus sign if you want to subtract a time value from the trigger point. Use of the plus sign (+) is not allowed when entering a positive value. Press the ENTER key, and the trigger point will be adjusted accordingly.

SWITCHER MEMORY MENU

Several Switcher Memory functions can be accessed through the Switcher Memory Menu display. If you press SHIFT/SW-MEM, the following Menu will appear on the screen:

SW-MEM SECTION :

1) SW-MEM ON/OFF
2) DELETE
3) EVENT NUMBER

Each of these functions will be discussed below.

SW-MEM ON/OFF (SWITCHER MEMORY ACTIVE)

For the events to be triggered, the Switcher Memory function must be in the EDL-accessible "ACTIVE" mode. To enable the ACTIVE mode, first be sure the message "SW-MEM ON" is displayed in the Menu Area. Then, press the SHIFT/SW-MEM keys and the number 1 key. The message will toggle to:

SW/MEM ON/ACTIVE

The Switcher Memory function will now remain activated, even when you exit the SW-MEM Event List and return to the normal EDL Display. At that time, the following message will remain in the Menu Area of the screen :

SW/MEM ACTIVE

This message indicates that all Switcher Memory events will occur during the appropriate edits as you auto-assemble your show.

You can turn off the ACTIVE mode (when "SW MEM ON/ACTIVE" is displayed) by pressing SHIFT/SW MEM and the number 1 key again. The "ACTIVE" message will now toggle back to "SW MEM ON."

DELETE (DELETING SW-MEM EVENTS)

To delete a Switcher-Memory event, press SHIFT/SW MEM, and then the number 2 key. The following prompt will be displayed :

DELETE SW-MEM EVENTS

You may now delete all events by pressing A or 0 (zero), or a specific event, or a range of events (for example 6,15 to delete events 6 through 15).

EVENT NUMBER (EVENT ASSOCIATION)

Switcher-Memory events are normally associated with the current event number. However, you can have a Switcher Memory event pertain to any other current EDL event by using the Event Association function.

To access Event Association, press SHIFT/SW MEM, then the number 3 key. The screen displays:

ASSOCIATED EVENT NO. =

Enter the new edit number to which you want the SW-MEM event to pertain. The next SW-MEM event entered will be activated by this new edit event.

PRINTING AND STORING SW-MEM EVENTS

Switcher-Memory Events may be output to a printer, punched on papertape, or stored on floppy disk.

When you are in the SW-MEM mode and you press the PRNT key, the screen will display:

OUTPUT TO PRINTER SW-MEM SEQUENCE #

You may enter A or 0 to print ALL events, or a specific event, or a range of events (e.g. 5,10 indicates events 5 through 10).

To save Switcher Memory events on disk or tape, first be sure the "SW-MEM ON" message is displayed. Then press the EDL/IO key, and the following menu will appear :

SW-MEM I/O SECTION :
1) DISK SAVE 2) PAPERTAPE SAVE

If you press the number 1 key, the screen will display:

OUTPUT TO DISK SW-MEM SEQUENCE #

If you have papertape peripherals, press the number 2 key. The screen will display :

OUTPUT TO PAPERTAPE SW-MEM SEQUENCE #

Enter all events, a single event, or a range of events. The selected events will then be stored on floppy disk or papertape.

NOTE: SW-MEM events are renumbered consecutively at 1, regardless of holes left by deletions.

SYNC ROLL

SECTION 20 OVERVIEW

The Sync Roll function, also called "edit on the fly", provides the capability of editing Iso Reels in real time during Record or some of the Preview modes.

As you make each edit you may select either a Cut, Wipe, or Dissolve transition between the playback reels, much as a director does with live sources during a live taping. But instead of selecting camera shots from an effects switcher, you indicate desired edits from the keyboard by pressing the green Select key of the desired playback machine. As each new source is selected, the edit points of the just completed scene are logged in the edit list for later revision or for Auto-Assembly.

ESTABLISHING IN-TIMES

Before using Sync Roll, you must determine the desired start time for each Iso Reel. In the case of Iso Reels with identical time code, obviously you must enter the same In-time in the Menu Area for each reel. If your Iso Reels do not have identical

time code, you must sync up these reels and determine the exact start time for each reel that will be in sync with other reels.

SYNC ROLL DIALOGUE

Once you have entered the In-times for the desired Sources, you are ready to enter the Sync Roll mode. When you press the SYNC ROLL key, the System Message Area will display:

DESIRED MACHINES =

Press the Select keys of those playback sources you wish to use during Sync Roll. The system always assumes you wish to use the R-VTR, AUX and BLACK keys, so you do not have to press these. After you select the desired playback machines press the ENTER key and the edit screen will then display:

FIRST SOURCE =

Press the Select key for the machine that you wish to begin your edit sequence, and the ENTER key. The Menu Area will now display:

- SYNC ROLL ACTIVE -

In addition, an asterisk will be placed by the selected machines in the Time Code Status Display area on the right side of the edit screen.

AUTOMATIC MODES WITH SYNC ROLL

At this point, you are now ready to edit using the Sync Roll Option. You may use either the Record mode, the VVV or BVB Preview modes. After you select one of these automatic functions, the 330XL cues all participating playback machines to their

selected preroll points. From this point on, the machines will roll in sync with each other. At the indicated edit In-time, the CMX will cut to the selected first source. The system will stay on this first source until you press the Select key of another participating machine.

For example, let's say you had selected the A-VTR as the first source. After the A-VTR has passed its edit In-point in the Preview or Record, you may want to cut to the B-VTR by pressing its Select key. The B-VTR's crosspoint will be automatically selected on the switcher. In addition, the A-VTR's In and Out-times used to create the first edit will be logged into the edit list. The In-times for all machines involved in Sync Roll will also be updated in the Menu Area.

WIPE AND DISSOLVE TRANSITIONS

You may also call for dissolve and wipe transitions during Sync Roll. To perform a dissolve, press the DISS key and the edit screen will display:

RATE =

Type in the desired dissolve duration and press the ENTER key. You may now select any other source that is part of the Sync Roll, and the 330XL will perform a dissolve to the new selected reel. For example, if you are on the B-VTR and have set up a 30-frame dissolve, when you press the C-VTR's Select key, the 330XL will execute a dissolve from the B-VTR to the C-VTR. The edit that was just completed will be logged into the edit list.

To perform a wipe transition, press the WIPE key and the edit screen will display:

WIPE CODE = W

Type in the desired Wipe Code number and press ENTER. The edit screen will then ask for the transition duration:

RATE =

Type in the desired number of frames for the wipe transition and press ENTER. You may now press the VTR Select key that you wish to wipe to.

Once you have selected a transition, it will remain in effect until you enter a new transition type.

GENERAL SYNC ROLL RULES

The following is a list of general rules that pertain to the Sync Roll mode:

- Sync Roll must begin with a Cut.

- If you press the Select key of a playback machine that is already selected, the system will ignore the command.

- If you try to select a machine that has not been designated as a Sync Roll source, the system will ignore it. AUX and BLACK, however, may always be selected.

- You cannot change the A/V mode once Sync Roll Preview or Record is in progress. You may, however, select any combination of VIDEO, A-1, or A-2 before you begin a Sync Roll automatic

function. Split A/V edits are not legal during Sync Roll.

- Only cut, wipe, and dissolve transitions are acceptable during Sync Roll. Keys are not legal.

- The only automatic modes acceptable in Sync Roll are Record, VVV and BVB Previews, and Replay. The following automatic functions are disabled during Sync Roll: VBV Previews, Out-point Previews, and Auto-Assembly.

ENDING SYNC ROLL

To terminate the edit sequence, press the red REC key if you are in Record or press ALLSTOP if you are in the Preview mode.

To deactivate Sync Roll, just press the SYNC ROLL key again. The "- SYNC ROLL ACTIVE -" message will be erased.

If you used the Preview mode during Sync Roll, you may now go back and Auto-Assemble your newly completed Edit Decision List. If you used the Record mode, you can go back and view the Record Master videotape. If you see any changes you wish to make, you can use the edit list to re-edit any desired event.

GLOSSARY OF TERMS

A-B ROLLS duplicate rolls of video tape information having identical time code; required to achieve effects or dissolves between scenes.

ACCESS TIME time required to retrieve video information during editing or assembly.

ADDRESS See FRAME ADDRESS.

ADDRESS LINES Serial or Parallel lines used exclusively for transfer or communication of address information with a memory device.

ASCII AMERICAN STANDARD CODE FOR INFORMATION INTERCHANGE a list of binary encoded letters, numbers, and characters.

AUTO ASSEMBLE generation of an edited master by the 330XL system, using an existing stored edit decision list.

ASSEMBLE EDIT the type of editing in which new video material and control track are recorded on a blank master tape.

ASSEMBLE MODE A sequential assembly of the edit list. This assembly will continue in an automatic mode until all edits have been assembled or until the first event with an unassigned reel number is found.

When an event is found with required reels unassigned the system will report which event and the reel or reels that are required to continue. The editor must load the correct reel or reels and tell the system which VTR they are on.

ASSEMBLY MODE B causes the auto assembly process to continue as long as there are reels from which to record. This mode is also known as "checkerboard" assembly. The system in many cases is more efficient in this mode.

EXAMPLE: Reels 5, 29, and 44 are loaded on VTRs. The system will look at the list and assemble all edits that have reel numbers 5, 29 and 44 assigned to them, inserting these events at the exact spot on the master tape where they belong.

ATR abbreviation for Audio Tape Recorder.

AUX AUXILIARY a channel with which a video device (video camera, film chain, etc.) can be connected to the 330XL's editing capabilities.

BALANCE equality of level in the red, green and blue images which produces neutral blacks and clean whites.

BACK TIME to calculate a tape in-point by finding the out-point and subtracting the duration of the edit.

BANDING evenly spaced horizontal bars or bands across the picture which differ in brightness or color saturation from the rest of the picture.

BAUD one bit per second.

BINARY composed exclusively of two values (i.e. on and off, plus and minus, 0 and 1).

BCD Binary Coded Decimal.

BINARY DATA information encoded as a series of two-state levels, usually referred to as high or low, or Logic "1" or Logic "0".

BIT a unit of information.

BLACK BALANCE normally the lowest levels in the TV signal, representing shadow areas, that are adjusted to touch the setup level on the waveform display of the signal.

BLACK BURST provides the synchronizing signals for the system to lock on to and stabilize the VTRs. Also known as color black, crystal sync and edit black.

BLANKING the process of rendering the scanning beam inoperative so that it will not be seen during the retrace period. Horizontal and vertical blanking pulses cut off the scanning beam as it is moved from right to left for each line, and as it travels from the bottom to the top of the picture after each field.

BLANKING LEVEL zero signal level. Below this level, in the "blacker-than-black" or negative direction, are the sync pulses. Above this level, in the positive direction, the picture signals appear.

BOOT (Boot Strap) basic program of loading instructions for computer.

BREAKUP a momentary image distortion.

BUMP OUT the function within the CMX 330XL that allows an open ended edit to be terminated.

CPU Central Processing Unit.

CAMERA MATCH shot to shot picture fidelity. Improperly matched cameras may exhibit differences in level, balance, colorimetry, or defects which will cause the picture quality to change from shot to shot.

CAPSTAN powered shaft or spindle which is used to drive a magnetic tape by pulling it at a uniform speed.

CAPSTAN SERVO an electronic circuit that controls capstan speed with enough stability to have video information read in correct sequence by the magnetic heads.

CARD CAGE A frame with slots or guides and containing connectors for plug-in Circuit Card Assemblies.

CATHODE RAY TUBE (CRT) the picture tube of a television monitor.

CHANNEL a communications line.

CHROMA CONTROL the control for adjusting the color saturation in the reproduced picture.

CHROMA KEY the electronic equivalent of "blue process" photography; a matting technique whereby all of a primary color is removed from the foreground scene and a background scene substituted. In most instances the blue is matted out because it will not affect flesh tones.

CHROMINANCE the term used to indicate both the hue and saturation of color.

CINCHING a term used to describe a folded up or buckled tape caused by the sudden stopping of spinning reel of tape.

CIRCUIT CARD ASSEMBLY (CCA) a printed circuit card complete with components.

CLIPPING an electronic limit usually imposed in cameras to avoid overly bright or dark signals. When improperly applied can result in loss of picture information in very bright or very dark areas.

CLOGGED HEAD a buildup of oxide on the video head that can cause "noise," breakup or loss of a picture.

COLOR BALANCE adjustment of the color of an electronic camera to meet a desired standard - i.e. color bar, sponsor's product, flesh tones.

COLOR BARS an electrically generated signal consisting of red, blue, green, yellow, cyan and magenta, plus black and white, to standards established by SMPTE. Color bars are used as reference at the head end of a videotape recording for set up insuring accurate color saturation and balance during playback.

COLOR BLACK see BLACK BURST.

COLOR FRAME The video frame polarity. Color frames must alternate polarity with each frame to keep the video signal in phase.

COLORIMETRY The accurate analysis, processing, and reproduction of all colors. Some television cameras do not reproduce all colors accurately. The most noticeable colorimetry errors occur in the red area of the spectrum.

COMET TAIL video "lag" or smear caused by image retention of television pick-up tubesespecially vidicon tubes in film chains.

COMPRESSION lack of separation in signal levels. Commonly called "Black Compression" or "White Compression" indicating a lack of detail or gradation in the very dark or very light areas of the picture.

CONSOLE An equipment track that includes a desk type top or projection.

CONTROL TRACK A synchronizing signal on the edge of the tape which provides a reference for tracking control and tape speed. Control tracks which have heavy drop outs are improperly recorded may cause tracking defects or picture jumps.

CROSSTALK a signal from one part of a video tape interfering with another part.

CUE the operation through which a magnetic tape is stopped in predetermined position ahead of the edit in-point.

CURRENT LOOP a circuit designed to transfer data as a function of the presence or absence of current flow.

CUT the instantaneous transition from one information source to another.

CUTS ONLY transitions limited to on/off or transposition type edits. A Cuts Only system will not perform wipes, dissolves or keys.

CRYSTAL SYNC see BLACK BURST.

DATA LINES Serial or parallel lines used exclusively for transfer or communication of data in Binary, ASCII or other encoded form.

DATA TRANSFER the movement of data from one register or memory location to another, or from the computer to peripheral equipment.

DECODER circuit used to convert binary data pulses into decimal format.

DEC Digital Equipment Corporation.

DISC RECORDER a video recorder that records information in concentric circles upon a polished disc instead of upon video tape.

DISPLAY usually a CRT device upon which numbers, characters, graphics or other data is presented.

DISSOLVE an edit transition where one source of video or audio fades out while at the same time another source fades in.

DISTORTION a quality degradation between that which has been recorded and that which is reproduced.

DOWN TIME time used for maintenance or repair of equipment. Sometimes this term is also used to mean unsold or unused time.

DROP FRAME a system of modifying the frame counting sequence to alllow time code to match Real Time Clock.

DROP OUTS small bits of missing picture information usually caused by physical imperfections in the surface of the video tape.

DUB/DUPE terms used to describe a videotape duplicate. This corresponds to prints in film releasing. Dupe is now a more generally used term. To dub is also a term meaning a copy in both video and audio work.

DUMP ("Dump Edit List") where the EDL is transferred from the 330XL memory to hard copy form, a punched tape, or a floppy disk.

DURATION the length of time (in hours, minutes, seconds and frames) that a particular effect or section of audio or video material lasts.

EDGE CURL Edge curl usually occurs in the outside 1/16th inch of the video tape. If the tape is sufficiently deformed it will not make proper contact with the playback heads resulting in a loss of cue track or control track.

EDIT any point on a videotape where the audio or video information has been added to, replaced, or otherwise altered from its original form.

EDIT BLACK see BLACK BURST.

EDIT CODE an electronic signal recorded on a VTR cue track which assigns an "address" to each video frame.

EDIT DISPLAY a display used exclusively to present editing data and editors' decision lists.

EDIT LIST (Edit Decision List - EDL) a record of all the edit decisions made for a video program (such as in-times, out-times, and effects) in the form of printed copy, papertape, or floppy disk, which is used to automatically assemble the program at a later time.

EDIT POINT (Edit-in, Edit-out) the beginning and ending points for a selected event within a program being assembled on magnetic tape.

EDITEC registered trademark for Ampex's electronic editor.

EFFECT multi-source transition. Any effect such as colorizing, chroma keying, etc.

EFFECTS SWITCHER an electronic switcher that includes the generation control and coordination of special effects.

ELECTRON BEAM RECORDING (EBR) method of transferring tape-to-film in which electronic information is scanned directly onto film.

EIA Electronic Industries Association.

EIAJ Electronic Industries Association of Japan.

END POINT the end of the transition in a dissolve or wipe.

ENHANCEMENT a form of signal processing which artificially sharpens an image by accentuating the transitions or edges within the picture. This edge sharpening can produce unwanted ringing and noise if not carefully and sparingly applied.

EVENT NUMBER a number assigned by the editor to each edit that is recorded in the EDL.

EQUIPMENT CONTROLLERS electronic equipment used to automatically operate production equipment to pre-set standards upon command.

EXECUTIVE the highest level of control within the system e.g. the CPU and operating program.

FEEDS lines used to supply or interconnect audio, video etc. into, out of and about the studio.

FIELD one-half of a complete TV scanning cycle (1/60th of a second).

FILM CHAIN a term used to encompass the total grouping of equipment used to convert film picture frames to electronic picture frames; usually consists of film and slide projectors, a multiplexer and a television camera.

FILM/TAPE reference to material shot on film and edited on tape.

FIRST LINE ERROR velocity error (color hue difference) confined to single scan lines evenly spaced down the picture.

FLYING ERASE HEAD rotating erase head needed for helical VTRs with editing capability.

FRAME one complete TV scanning cycle (approximately 1/30th of a second); contains two fields.

FRAME ADDRESS the hours / minutes / seconds / frames numbers assigned each video frame in time code videotape editing. Usually called Time Code location.

FRAME LOCK synchronization between house video and taped time code.

FRAME TOLERANCE the number of frames by which the VTR is allowed to deviate from the specified edit point.

FROM SOURCE the VTR or other device that is generating the audio or video signal that is being dissolved or wiped away from.

GAIN (Video) the video or audio level. To "ride the gain" refers to the continual adjustment of levels in real time during recording.

GENERAL PURPOSE INTERFACE (GPI) a CMX device functioning as an equipment controller on a level of control that can only stop and start external devices.

GENERATION this refers to the number of times a dupe is removed from the original master video tape.

HARDWARE the physical components (computer, cables, monitor, tape machine etc.) that comprise an editing or video system.

HEAD the scanning device on the VTR which records or plays back the video information from the videotape. There is also an audio head on a VTR that records the sound track separately on a special portion of the videotape.

HELICAL SCAN a type of VTR in which the tape is wrapped in a helix pattern around the video heads that rotate longitudinally to the tape and thus lay video information down across the tape at a slant.

HELICAL WORKPRINT a helical copy of the master footage, which usually has the time code displayed in the picture for editing convenience.

HIGH-BAND a high-resolution videotape recording using the 7.9 : 10 megahertz carrier signal.

HUM sixty cycle powerline frequency which has interfered with the video signal. This may occur in the camera sweep circuits causing a slow moving wobble or warp to the picture, or it may affect the video level appearing as a slow moving horizontal line or bar rolling up the picture.

HUMAN INTERFACE devices by which the human operator directs the operation of the machine or system.

IN-FRAME EDIT see MATCH FRAME EDIT.

INIT see INITIALIZE.

INITIALIZE setting equipment switches and circuits to their starting position and values.

IN-POINT the beginning of an edit; the first frame that is recorded.

INPUT-OUTPUT I/O term used to describe a communication link or function with a computer.

IEEE Institute of Electrical and Electronic Engineers

INTELLIGENT INTERFACE (I^2) "I-squared" a sophisticated microprocessor controller of videotape and audio tape machines, and switchers.

INTERLOCK to run sound and picture together in perfect sync when they are on separate pieces of film and/or tape.

INSERT EDIT the type of edit in which new video material is inserted into existing material (or black) already recorded on the master tape. No new time code or control track is recorded.

ISO REEL (ISOLATED) multiple reels of tape of the same subject recorded simultaneously from different cameras on different VTRs.

JAM SYNC the process of locking a time code generator to the recorded time code on an existing tape for the purpose of re-creating or extending time code on the tape. This may be necessary because existing code beyond a given point on tape may be non-existent or of poor quality.

JOGGING the process of slowly advancing or rewinding a videotape in order to examine recorded video at slow speed.

KEY an electronic method by which the brightness (luminance) information of a television picture is used to trigger a transition or an effect between itself and another video source.

KEYBOARD AND DISPLAY typewriter keyboard and CRT display in combination to serve as a human interface to an electronics system.

KINE WORKPRINT a film copy of videotape footage that includes the time code displayed in the picture.

KINESCOPE RECORDING made by photographing the display of a television monitor with a motion picture camera.

LAG comet tail under some lighting conditions, camera pick up tubes will exhibit image retention in bright areas of picture causing these areas to form "comet tails" or smears when the camera is moved or panned. As no two tubes will react exactly the same, lag often appears as a color trail green, red or blue or any of these in combination.

LEVEL loudness, a quantitative measure of a video signal. A low level indicates the dark portions a high level indicates the bright.

L.E.D. Light Emitting Diode.

LOAD the act of transferring either an operating program or an edit decision list into the 330XL memory from an external storage medium (i.e. paper tape; floppy disc).

LOGIC "1" a binary element with a value of "1" when expressed as equivalent to a positive voltage.

LOGIC "0" a binary element with a value of "0" when expressed as equivalent to the absence of voltage.

LONGITUDINAL TIME CODE (LTC) time code information recorded as an audio signal, usually on track 2 or 3.

LOSS OF SIGNAL (LOS) loss of correct communication between interface (I^2) and the Supervisor. Communication must be reset in order for machine control to be re-established.

LOW-BAND a videotape recording using the 5: 6.5 megahertz carrier signal.

LIST (EDL) the compiling of edit events stored in the system 330XL memory.

MAINFRAME computer housing, bus, power supplies, CPU and memory elements, usually includes registers and arithmetic elements.

MARK (Mark In; Mark Out) used on CMX systems, and is the term used to describe the function of entering edit time "in" or edit time "out" (edit time code) "on-the-fly".

MASTER the videotape on which the edited audio and video material is being recorded.

MASTER-SLAVE a software option which allows the CMX user to maintain synchronization between two or

more magnetic tape machines using one machine as the control reference or master.

MATCH-FRAME EDIT an edit in which a scene already recorded on the master is continued with no appparent interruption . A match-frame edit is done by setting the record and source in-points equal to their respective out-points for the scene that is to be extended.

MEGAHERTZ one million cycles per second.

MICROPHONICS video level distortions caused by sound or physical vibration picked up by sensitive camera tubes or other video equipment. These appear as flickering horizontal lines and bars across the picture.

MICROSECOND one millionth of a second.

MID-POINTS the entrance/exit frame addresses at the mid-point of a dissolve or special effects transition.

MILLISECOND one thousandth of a second.

MOIRE the effect produced when one frequency is superimposed over another frequency. This may be observed when a man wearing a pinstriped suit is recorded through a television system. When the camera is close enough to resolve the stripes, the suit will flicker and show larger stripes as the suit approachs sub-carrier frequency. In some one- inch recorders, moire' is produced by the carrier frequency over-lapping the color sub-carrier.

MONITOR a CRT display used to present video program material.

MULTIPLE RECORD a software option allowing CMX users to generate multiple edited masters.

MULTIPLEX to take or be capable of taking several different signals and send them through one source.

NTSC FORMAT a system of coding color information for television transmission used primarily in the United States and Japan formulated by the National Television Systems Committee in the early 1950s.

NTSC National Televison Systems Committee; of the Electronics Industries Association (EIA) that prepared the standard specifications approved by the FCC, December, 1953, for commercial color television broadcasting.

NIXIE a type of lighted display that changes electrical information into visual information.

NOISE tape term used to define unwanted amount of video signal. Video noise is comparable in appearance to "grain" in motion pictures.

NON-DROP FRAME a system of time code that retains all frame numbers in chronological order, resulting in a slight deviation from clock time.

OFF-LINE EDITING editing that is done to produce an edit decision list, which is used later for assembling the program on a CMX 330XL, 330XL system or the EDGE. A videotape (sometimes called a work edit) may be produced as a by-product of off-line editing.

ON-LINE EDITING Editing that is done to produce a finished program master.

ON-THE FLY reference to choosing a tape edit point while VTR is moving at sound speed.

OPEN-ENDED EDIT an edit without a defined out-point. The system will record until it receives an end-edit command by depressing the Record key (without control).

OPERATING PROGRAM the computer software program which controls all functions of related computers and hardware devices. The CMX 330XL operating program is "interactive" between the human operator and the working devices.

OEM original equipment manufacturer

OSCILLOSCOPE an electronic test unit that converts videotape picture information into measurable units.

OUT-POINT the end of an edit; the first frame that is not recorded.

OVER DEVIATION commonly called "bearding" caused by an excess of chroma or video level which is too high for the tape to handle. Appears as a black "fringing" in overly bright picture or overly saturated color.

OXIDE the magnetic particles which when properly distributed in a plastic binder and coated on a backing or base, form the magnetic tape.

PACE 16-bit microprocessor by National Semiconductor.

PARALLEL DATA data simultaneously presented upon or transferred over parallel lines.

PHASE Hue, color signals in correct phase will reproduce color as the camera saw them. Signals which are "out of phase" will exhibit "hue shift" which is most noticeable in flesh tones giving rise to magenta or green faces.

PAL (Phase Alternate by Line) a system of recording and transmitting color video signals developed in Germany and in common use throughout most of Europe.

PORT a connection point into a computer, having access to the CPU.

PORTHOLE See SHADING (Field).

PREROLL the number of frames between the cue point and the edit point and the edit point and which is essential to the synchronizing of VTRs/ATRs.

PROCESSING ELEMENTS circuits, lines and equipment used to manipulate data / information, and to direct the responses of other sub-elements.

PRODUCTION DEVICE equipment used to perform specific production tasks e.g. a VTR.

PROGRAM a sequence of instructions used to tell the computer how to receive, process, store and transmit information.

PULSE COUNT a method of editing in which the system counts control track pulses to find locations on the tape.

QUADRUPLEX VTR designation given professional broadcast VTRs because of the number of heads (4) and their placement on the spinning headwheel transverse to the tape movement.

RACK a metal housing or frame used for mounting equipment. A rack may, or may not, be enclosed.

RANDOM ACCESS ability to retrieve video information from any point upon a tape or disc.

RE-EDIT the function within the 330XL used to modify existing events within the Edit Decision List.

REACTION TIME the delay (in frames) between the time the operator sees the desired edit point and the time that he pushed the Mark-In or Mark-Out button.

READOUT how the equipment produces the information-i.e. visually on a nixie tube display or on punch cards, etc.

READER/PUNCH a combination machine consisting of both a tape punch (or perforator) and a tape reader.

REAL TIME actual elapsed time

REAL TIME CLOCK a timing signal derived from the house composite sync.

RGB CHANNELS the red, green and blue color channels.

REEL NUMBER the number assigned by the operator to each reel or cassette of videotape used in the editing session. Used for purposes of identifying each reel or cassette on the edit list for the final assembly or for future revisions.

REGISTER a circuit providing short term storage (memory) of binary information.

REGISTRATION the alignment of the red, green and blue images precisely on top of one another. When one or more of the images are misaligned, color edge images are visible at sharp transitions.

RESOLUTION sharpness, the ability of a system to reproduce fine detail and clean sharp edges.

RINGING an edge effect which is commonly seen in sharp black to white or white to black transitions. Ringing appears as a secondary edge (or ghost edge) usually on the right hand side of the transition. When excessive enhancement has been used, ringing may appear on all sides of a sharply defined object or the lettering in a title or graphic.

SAFE TITLE or SAFE ACTION AREA geometrical boundaries set up as a guide to avoid the placement of important action or titles at the edges of the picture which may be cut off on home receivers.

SATURATION a term used to describe the amount of color in a picture.

SCRATCHES videotape scratches appear as an evenly spaced series of drop outs forming a diagonal line across the picture.

SECAM a system of coding color information for television transmission developed in France and

primarily used in France and the USSR. The basis of operation is the sequential recording of primary colors in alternate lines.

SERIAL DATA data sequentially presented upon or transferred over a single line.

SERVO LOOP a closed loop feedback circuit from the output to the input where the output is compared with the command signal.

SETUP LEVEL in North American television, this is the space, nominally 7 1/2 IEEE units in the composite video signal, between the blanking (zero) level and the black peaks in the picture signal.

SERVO any electro mechanical control device using an external reference.

SET (Set-in; Set-out) the function of entering start or stop data in the time code format.

SHADING refers to the process of setting proper white level, black level and color balance on the output of a color electronic camera.

SHADOW-MASK TRANSFER a film transfer made from a CRT with a special screen.

SHEDDING a condition in which the oxide, which forms the recording surface of the videotape, has begun to separate from the base. This loose oxide clogs the videoheads resulting in loss of picture.

SKEWING a term used to describe a picture condition on a television monitor when the vertical lines appear in a zig-zag condition.

SLANT-TRACK another name for a helical VTR.

SMEARING an electronic defect which causes bright objects to flare or trail off towards the right hand side of the picture.

SOFTWARE the operational instructions loaded into computer memory that control how and when system hardware will execute its operations.

SPLIT EDIT a type of edit transition where either the audio or video of the source is delayed from being recorded for a given time.

SMPTE the Society of Motion Picture and Television Engineers.

SMPTE EDIT CODE an 80-bit standardized time code adopted by SMPTE.

STREAKING an unwanted level change in the portion of a picture, directly to the right hand and left of a very bright object, continuing all the way across the screen.

SWITCHER a device used for performing simple switch on/switch-off, transpositions or in complex devices coordination of special effects.

SYNC a pulse included in the signal which provides a synchronizing reference for each frame and scanning line of the picture. Defects in this pulse may cause jumping, rolling, or breakup.

SYNCHRONIZATION the precise coincidence of two signals, pulses or events.

SYSTEM PHASE when used with the 330XL system it refers to the switcher X-point to be used as the reference when setting color phase.

TAPE PUNCH a machine used to store binary information on a paper tape in the form of a coded series of punched holes.

TAPE READER a device which is used to translate binary data from punched paper tapes into electrically equivalent signals.

TELECINE a combination of TELEvision and CINEma--this term often is used to describe the room in a videotape facility where film chain equipment is located.

TELEPRINTER a keyboard/printer terminal unit capable of providing continuous printed copies of inputs and outputs.

TTY teletype

TIME BASE ERROR a variation in the relationship between the picture information and the sync pulse, the color information, or the reference burst which cannot be correctd in normal playback. This problem is normally associated with helical tape formats such as one inch, one-half inch, and three-quarter inch tapes.

TIMEBASE STABILITY the degree of variation of playback speed to original record speed or external reference measured in very precise units.

TIME CODE SMPTE Standard for encoding time in hours, minutes, seconds and frames of video.

TIME CODE GENERATOR a signal generator designed to generate and transmit SMPTE time code.

TIME CODE READER a counter designed to read and display SMPTE time code.

TO-SOURCE the VTR or other device that is generating the audio or video signal that is being cut, dissolved or wiped to.

TRANSITION POINT the beginning point of a dissolve or wipe, or the point at which a cut occurs.

TRANSIENTS unwanted disturbances in video signals which travel or come and go causing small flaws in the picture.

TRACKING the process by which the video head on a playback machine follows exactly the same path as the video head that recorded the signal loss of tracking is evidenced by picture break up or loss of video in segments of the picture.

TRIM to add to or subtract from an edit time or duration (using hours, minutes, seconds and frames.)

UART universal asynchronous receiver / transmitter, an I.C. used to convert serial data to Parallel data and vice versa.

UPCUT an incorrect edit in-time which requires the edit point to be trimmed back. Usually the result of a slow reaction time when editing-on-the-fly.

USER BITS undefined bits within the 80 bit SMPTE time code word that are available for uses other than time code.

VECTOR INTERRUPT an interrupt of routine sequence that results in the operation of the computer to move to a different, but pre-determined address in the operating program.

VELOCITY ERROR evenly spaced horizontal segments of picture which exhibit hue shift from top to bottom. Velocity error is always more severe on the right side of the picture and occurs only in two-inch VTRs.

VIR Vertical Interval Reference signal inserted on line 19, both fields of a television program. It purpose is to provide a reference for automatic processing

equipment effecting corrections of signal path discrepancies.

VITC Vertical Interval Time Code information recorded as part of the vertical blanking segment of video.

VITS Vertical Interval Test Signal signals transmitted on lines 17 and 18 both fields the purpose of which is to evaluate system performance. Usually transmitted are: color bars, multi-burst, modulated stairstep and composite.

VIDEO the composite picture signal complete with audio, picture information, sync pulses etc.

VIDEOCASSETTES video tape pre-packaged in self-enclosed plastic cases.

VCR Video Cassette Recorder.

VIDEOTAPE plastic-based tape coated with oxides capable of being magnetized in a uniform manner and of holding those patterns; also refers to the entire technology of recording picture and sound using magnetic tape.

VIDEOTAPE RECORDER (VTR) an electronic recording machine that magnetically imprints video and audio information onto videotape. VTR refers to both cassette and reel-to-reel machines.

WIPE an edit transition where one video signal replaces another video signal on the TV screen in a pre-determined pattern.

WIPE CODE a two or three digit numeric code used to identify a "wipe" pattern.

WRINKLES a physical deformity of the videotape. Any crease or wrinkle in the videotape may produce dropouts or loss of picture information.

ZERO FRAME DISSOLVE a dissolve with a duration of zero frames; equivalent to a cut. A technique used to synchronize two source machines so that manual audio or video transitions can be made between them.

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